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THE BOYS' FLOAT AT THE HEAD OF THE PARADE.

The Making of an Alliance with a Chamber of Commerce

N. F. Fultz, Anderson, Ind.



HE business of the public school is undergoing a change. It matters not what it has been in the past, nor how well it was handled. Now, the business of a community, large or small, is the business of the school. It would be needless, at this time, to urge that viewpoint among the live school people of this country. Those who have not come to that, have an eye-rubbing coming that has been delayed.

The problem is to establish a working, vital relation between the industries that must, sooner or later, draw upon the school for its product, in a direct or indirect way, and the school plant that is built both in spirit and in truth to serve. It is a new problem, educationally speaking, and almost as new industrially speaking. The awakening for all has become general. Already the industries are working at the solution with as much energy—even more in some quarters—as the school. This is no attempt to say that it is universal. Plenty there are who will say, and have the proof at hand, that the industries are not interested in the movement of vocational education.

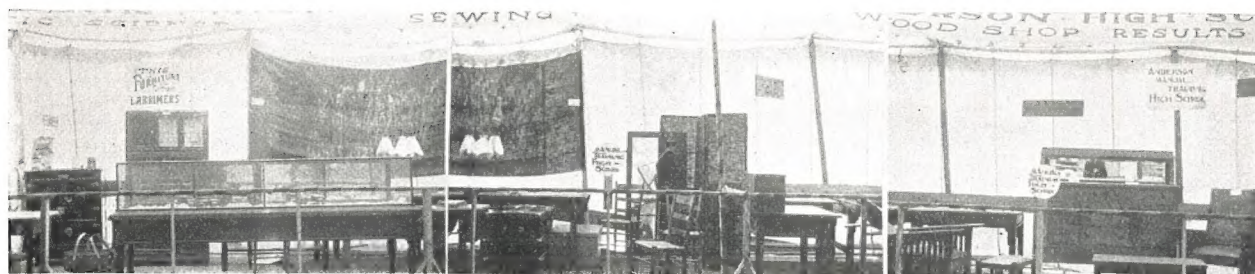
There is this species in Anderson. It matters not what the effort may be, or what will be the ultimate outcome of every effort along the line of establishing a wholesome atmosphere of appreciation between the schools of Anderson and her sources of employment. This class will be here, as they will with you in your problem. They are not alone in the industries. All in

all, the majority is likely to be found on the other side of the situation. It is the human nature in the equation.

It is fortunate that this condition does not control the things that have been attempted and done in some cases. There is a school policy here. There is a school belief back of it. First, the belief is that it is possible for the schools to serve both directly and indirectly the city's manufacturing and commercial interests.

The policy was to show them and to convince. No matter where it may be tried, the conviction is, after four years of experiment and much hard labor, that it cannot be done in a day and a night; that disappointments, not best to enumerate in detail, await you; that the success cannot be complete even in a generation, for good old Father Time must be reckoned with; that the proposition requires plenty of bold initiative, and even at best you can never know just how well you are succeeding.

The thing was approached thru the Chamber of Commerce. We are mighty glad that we have a Chamber of Commerce in Anderson. The members are the aggressive folks of the town. The membership is not confined to manufacturers but to good citizens. There are a few school people on the roll. The activities of the Chamber center around the welfare of the various manufacturing plants of the city. That is not greatly different from the common work of the civic body as generally understood, especially here in the Middle West.



Cooking.

Sewing.

Woodwork.

Some three years ago, the Chamber proposed a "Made in Anderson" exhibit. It was one of the first planned in the state, and the people hoped to make it a big affair, that it might be a pacemaker for others that were sure to follow. The display was to be placed under canvas and arranged on each of the two sides of a paved street. The tent covered five city blocks in length. A full week was given to making a big success of it. Two large parades were planned, and each day of the week was made a special day. One of these days was Riley Day, when the "Hoosier Poet" was to be welcomed back home.

Early in the preliminaries, the school people were approached for their contribution to the success of the "Made in Anderson" exhibit. Those interested in the school's policy of Industrial Education, saw the opportunity they had long hoped would come their way. They had tried school exhibits, with the usual degree of success, but there was a feeling that these old tricks of the school trade did not reach the very people that they, as shop people, had a hope of reaching. You cannot arrest a manufacturer, or a mechanic, and bring him to your schoolhouse affairs. The opportunity was to become a part of "the game" and meet him upon "his own grounds" and "play the game" as he, the manufacturer and businessman, prescribed the rules. As to how well they succeeded, you may best judge by the narrative.

The Committee on Arrangement from the Chamber of Commerce called. They looked over the school plant in the usual hurried and businesslike way.

"How many feet do you people want?" came the inquiry.

"Just as many as your committee will grant,"—that had been decided in advance.

"Do you propose a 'still' or a 'live' display?" came next.

"We hope to make it the livest thing under the canvas," they were assured.

"There have been no assignments of space, and since you are the schools, you may have a choice of one hundred feet," suggested the chairman.

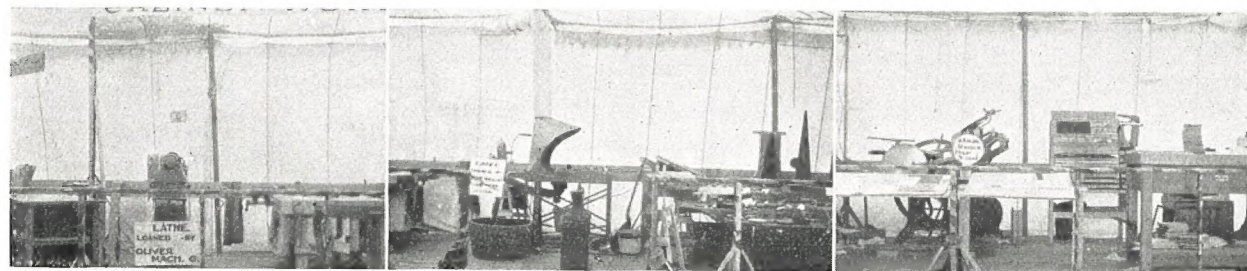
They took the first hundred feet at the head of the tent.

"Do you aim to get into either, or both, of the parades with floats?" was asked. They were assured that the boys and girls would get into both with the full intention of "pulling down" the cash prizes offered.

That closed the agreement. It was made without consultation with the very people upon whom the success of that bargain rested or failed. There was ample confidence in the students not to be betrayed when the test came. Briefly, the affairs of the show were placed in the hands of the pick of the school shops. It was manned by not more than twenty boys and girls from a group of over four hundred. While that selection was made, under the guise of the volunteer method, the picking was carefully done. He who qualified must be a worker; a worker with understanding, and one who could stand up under the eye of a crowd and not lose sight of the purpose for which the schools were going into the show.

Every boy and girl realized that they were going out of their class so to speak; that they were competing for public consideration, with people who gave adult thought and money. The campaign slogan became, "Get 'the jump on them' and keep it."

It was as we expected, therefore, when that five long blocks of canvas was up and the entrance thrown open to the people who were to place their displays, that the high-school students with their dray, drove into the tent and commenced their work. They were busy from that minute to the closing. A few minutes after they came, rain began to fall and they took the tip of nature. An extra load of lumber arrived soon and the boys began to lay a floor high and dry above the brick street. A stretch of floor, one hundred feet long and eight feet wide, was laid in less than an hour and neighboring exhibitors began to take notice. They adopted the boys'



Woodwork.

Forge Work.

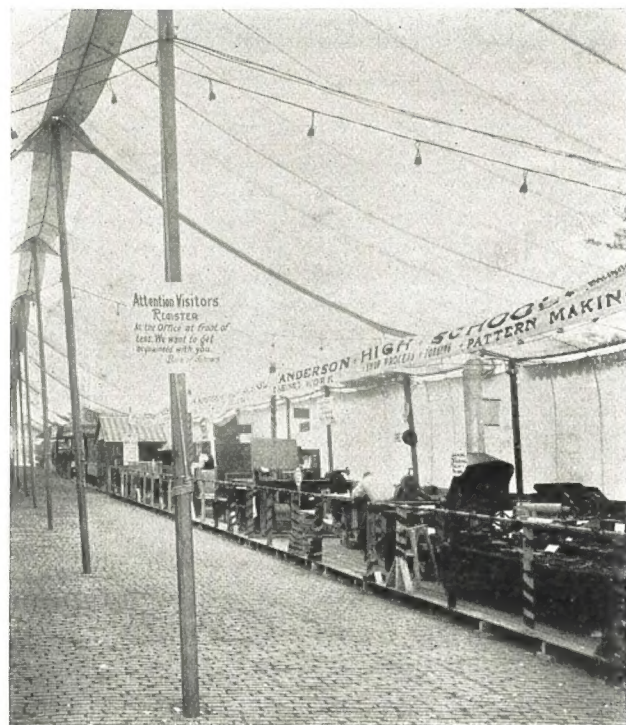
Printing.

idea and placed flooring under their own displays. That was a source of much satisfaction to the boys.

There were many exhibits, covering the entire industrial and commercial situation in Anderson. All exhibitors spent money liberally on them but only a few had "live" exhibits, that is, showed actual practice of their respective plants in the process of producing the goods. The schools planned to place all of the display groups, consisting of finished products of the woodwork, cooking, printing, dressmaking, forging and wood patternmaking first.

The show opened in the afternoon. The public took its first look and found boys busy placing their printing

after an Indian chief, "Chief Anderson." The old Indian's canoe is frequently taken as the town's emblem. In the float scheme, the canoe to represent Anderson, was built on a large scale, and placed upon a wagon. In it were placed two boys, on an elevation, in the prow of the boat. A miniature of the local high school was in the center, while the stern of the canoe carried a miniature factory. These were bound together by numerous strands of ribbon. Legends, on cards, were placed on the sides of the canoe as follows: Our Children, Our Schools, Our Industries. Attendants carried cards which read, Printing, Wood Patternmaking, Foundry Practice, etc. A ribbon attached to the miniature school, passed thru the



A Section of the Exhibit (Before the Opening).



An Evening Crowd.

press, forge, turning lathe and bench, while the girls completed their arrangements for cooking and sewing. The public learned then that there would be actual operations that evening. The public was not told, however, that it would be some time the next day before all of the activities would be in operation.

While one division of the students was making the preliminary arrangements at the tent, another was busy giving the finishing touches to the "School Float" which was to enter the "Industrial Parade" the following (second) day. The word had somehow drifted into camp that the school boys could not do better than second, at best, for one of the local corporations had a professional direct from Chicago at work on their float. It takes a worse story than that to take the fight out of the high school boys, and the careless individual who dropped the word knew that well. No details were overlooked.

The float was to be a justification of the schools' presence in an industrial display of the city. There is a local story that Anderson was founded and named

top of each banner to the small factory called "Our Industries. The float was drawn by a tractor made by a local firm. From an Anderson standpoint, the parade was a big thing. It might be said that the float made by the boys was *the feature*, for it was awarded first prize, and that night, when the show opened at the big tent, that rollicking high school spirit was in the air. The twenty boys and girls had gone into the other man's field, had entered his business and scored. A loyal student body proposed to let the people know that they were "right proud" of them.

During the evening, the girls cooked and served cookies to the passing throng. Not every one who passed received one, but more than one old skeptic, both male and female, saw what they had never seen before, school girls baking and cooking in a manner quite a marvel to them. At the other end of the platform, a motor purred. A young mechanic in the making, stepped up to a turning lathe and began turning out napkin rings in a manner that opened eyes and blocked the passage. The chances are that the young man did the job a little better

than the average member of the class in school. No matter what the remark from the crowd, he had been told that there would be someone else to do the talking and to answer questions. His work was the turning and turning in a manner that would create only admiration. It was easy to give those napkin rings away as souvenirs; and when the bench gang began to work up mahogany canes, they were sold far ahead of the output.

The next afternoon, the print shop began work and ran steadily during the remainder of the week. The students printed for distribution, several thousand little pamphlets containing a survey of the work and the hopes of the school authorities along the line of industrial education. The cover was done in color and carried this head: "Efficiency as an Industrial Asset." The pamphlets were given only to people who showed intelligent interest in the work and are known to have borne fruit.

The big trial came the second evening for it had been announced that the boys would do forge work. If there are twenty forge men in the town of Anderson, there must have been nineteen in the neighborhood of the anvil that evening, with a goodly sprinkling of men who could pick a piece of tool steel out of a mixed stock with as much alertness as some of the blacksmiths present. There was the usual number of curious females, proud mothers, and rooting young pupils on foot that would have taken a seat on the anvil if they thought they could have avoided the hammer.

Ceremonies were opened by a good old veteran of the leather apron announcing, in a voice keyed high: "Now, young man, go to it. I was born on top of an anvil and I have been looking for new tricks ever since." Frankly, as I hung around the fringe of the crowd, I did not envy the young student his job. It might be added that he did the work just as well as he had ever been told; likely as well as the old hero from that bed of steel could have told him or could have done it. The young man did not sidestep in the demonstration, but welded. Then, another boy took the hammer and pointed up a small center punch, hardened and then drew the temper. After driving it well into the welding piece, he handed both to the hero on the other side of the rope. The old man rolled them over in his hand, finally placed them in his pocket, mumbled something about "choking the hammer a little," and moved on, not a "good enough sport" to say, "Well done, my boy." Has any school shop man ever met with that type of mechanic?



"Jim" Riley Leaving the Exhibit.



A Buffet Shown as an Example of the Boys' Work in the Woodshop.

The week ended as it had begun. The group of boys and girls had made good. Every exhibitor under the canvas to this day will tell you so. Thousands saw just what was intended they should see; that which they would never have turned out of their path to see at a regular school display. Busy businessmen gave an unconscious hearing that would have been denied upon request. Manufacturers saw mechanics in the making, high school boys with an industrial intelligence. Very likely, only the grocer was dissatisfied, for he perchance saw his prospective crop of delivery boys, from the graduating class of the high school, growing smaller.

Did it pay? No question about the cost. The cost is not altogether reckoned in dollars expended by the board. There would be no need of listing here the amount of care, energy, concern and pleasure that it cost those who kept entirely in the background during that strenuous week. Instructors were on the ground all the time, but their places were out in the crowds seeing the affair from the spectator's standpoint. It was good tonic to hear the comments of the visitors. Only on rare occasions was the tonic at all bitter.

"Jim" Riley, beloved "Hoosier Poet," put it well in prose the day he visited friends in Anderson and the show. People called it "Riley Day" and thousands saw Mr. Riley for the first time, some few for the hundredth time, for Riley once lived in Anderson as a young printer and newspaper lad. For blocks children placed a carpet of flowers for their old friend as he drove past in his touring car. He stopped to pay his respects to his special friends, the school boys and girls. A member of his party called his attention to the several activities of the display. This was his comment: "What a surprise this is to me! I am mighty glad I can come back to Anderson now. Look what a display by boys and girls indicating a greater hope than ever for our schools. I know more of schools today than I ever knew before, and I am so glad that I came."

When the Chamber of Commerce gathered a few weeks after the show, and made the superintendent of schools and a member of the school board, members of their board of directors, then it was clear that the boys and girls had scored, and that it had paid. Since that day, the relations have been different from the old times.

There is ample opportunity for improvement and plenty of work ahead. Friends out in the shops and in their offices are valuable assets in the scheme of Industrial Arts.

Now it is known that the young man who has spent some time in the schools and in the right place in them, but who must go to work and goes without any fear of the overalls and all that they may stand for, will receive some first-hand consideration in the industries. This is not fancy or sentiment. It is school history made in the last three years, history made possible by the friendship courted and established between the schools and the members of the Chamber of Commerce.

It is needless to be misunderstood. Those things did not come entirely from the exhibit. But following the show, opportunities came to the schools and also the schools went to the shops to make good with commercial emergencies. These two or three instances will explain. They arose from the fact that Anderson, like any town, has a certain number of small industries, good employers of labor, but not maintaining the full manufacturing cycle. Some may lack the pattern shop, others the drafting facilities.

One of the early experiences came to the school shops thru a breakdown at one of the plants. The repair involved the making of some wood patterns or the delay of perhaps a week for castings from another factory. The firm had no patternmakers on its payroll. A very improbable thing to do; but they called up the school offices and asked for help. They wanted to know if the boys could tackle the job and save them time.

They were told to bring the broken castings to the school immediately. When the castings arrived, two students were assigned to the task of making the sketch, pattern and core boxes. The job was completed, by overtime work on the part of the boys, in what would be considered good scale time. The patterns went to the foundry of a local firm and in three days from the time that the school people were called, the machine was in operation. The incident had a two-fold value for the

school authorities. First, it gave them and their students first-hand experience in meeting a real commercial emergency in the most expedient way. No formal talk, test or trial, on the part of the instructor, could have discounted the completion of the job. The second advantage was that the schools convinced, by actual test, the commercial man, did it in his own way and to his own satisfaction.

There is no doubt but that the story was told by him in the rooms of the Chamber of Commerce. It would have been disappointing to some people if he had not, for no one in the work would deny the charge of doing the work for the good of the cause. Opportunities of placing students up against the real commercial test, have been and are solicited and encouraged to come to the school plant. When that fails, it is not out of province to court, flirt, even challenge. No manufacturer has ever challenged the spirit of the work, or its purpose, and not found a willingness on the part of the school shop to meet any reasonable test, job or emergency that he may bring.

Many profitable relations have in this way been established. Not every man in the town is convinced even of anything. Whatever these wholesome relations may be, it is safe to say that they had their origin in the Chamber of Commerce. To the school people, it is a pleasure to have such a force as an asset to a definite purpose.

When the present school year opened, the Chamber of Commerce had a definite work assigned as a part of the scheme to make this the best school year in the history of the schools. Their work was especially along the line of night school work. Literature was placed in all of their mail matter. The opening date of the school appeared on all cards that were placed about town, no matter what the other subject might be. The opening night of the evening school was marked by speeches by local favorites, moving pictures, etc. The principal speaker of the evening was the president of the Chamber of Commerce and that was considered worth while.



Float Planned and Decorated by the Girls of the Domestic Science Classes.

The latest hope of the schools and the Chamber is an industrial census (note that the word survey is avoided); that as a matter of common information, the real industrial possibilities of the town from a commercial as well as a school standpoint, may be at hand. The process and the result may be simple. It will be attempted, however, with the two parties working together, at one thing, for a common cause, whatever may be the

benefit—a thing about which there is not at present any doubt, locally speaking.

Thus the first problem noted in the beginning is being solved, likely almost solved, and as is ever the case in a development of any kind, another is presented. But the advantage is the schools' for they have the new asset, the vital relation, in a way which will or should make the thing easier.

THE HANDICRAFT OF BOOKBINDING

Ellen Gates Starr, Chicago, Ill.



WHEN I returned to Chicago in October from a beautiful country which was sending its young men into the horrors of destruction, it seemed to me that I should be unable to interest myself at all in a nice, constructive process, the result of which is designedly an object of luxury and beauty, fitted to peaceful enjoyment and to a life of harmony and possible contemplation. I practically closed my bindery and did not expect anyone to think either of possessing beautiful books or of learning to make them. But since I find that a few still purpose to continue the tenor of normal life, even including the pursuit of the minor arts, I have readjusted; and I find that there is rest for the racked nerves in a process of construction pursued thoroly and in quietness. I recall Morris pointing out in one of his lectures that it would be a pity to let art die out altogether, even for the cause of devoting every energy, as one is tempted to do, to bringing about a rational public life, as a fit garden for art.

My dear master, Mr. Cobden-Sanderson, who had betaken himself at about the age of forty from the practice of law and the study of philosophy, to rediscovering the old processes of thoro and beautiful binding, used also to say that he found "making his little patterns" with their balance and symmetry, soothing in the midst of a world of dissolving and vanishing systems of thought.

There is something to be said, too, on the practical side, for the well constructed book as a sort of strong-box for treasure. Many a precious document would never have been preserved for our use had it been entrusted to as frail a protection as a modern commercial binding.

Let us, then, since the mere fact that this series of articles is asked for proves that some believe thoro and comely workmanship worth while, proceed to consider the means of attaining it in the binding of books. I will first enumerate in their order the main processes of binding a book by the handicraft method, and then describe and illustrate them as far as will serve an unprofessional knowledge of the subject. Obviously, a few magazine pages are not intended to take the place of a manual or handbook, such a handbook as Mr. Douglas Cockerell's "Bookbinding;" nor is even a good handbook intended to supplant a course of instruction.

1. Taking the book apart if it has been bound before. (Figure 2, A.)
2. "Knocking out" the hinges with a hammer on an iron slab.
3. Mending sheets torn in process of pulling sections apart, and the holes sawed for commercial sewing. (Figure 2, B.)
4. Re-folding, if necessary.
5. Cutting tops or "heads" of sections.
6. Cutting or filing edges for gilding a book to

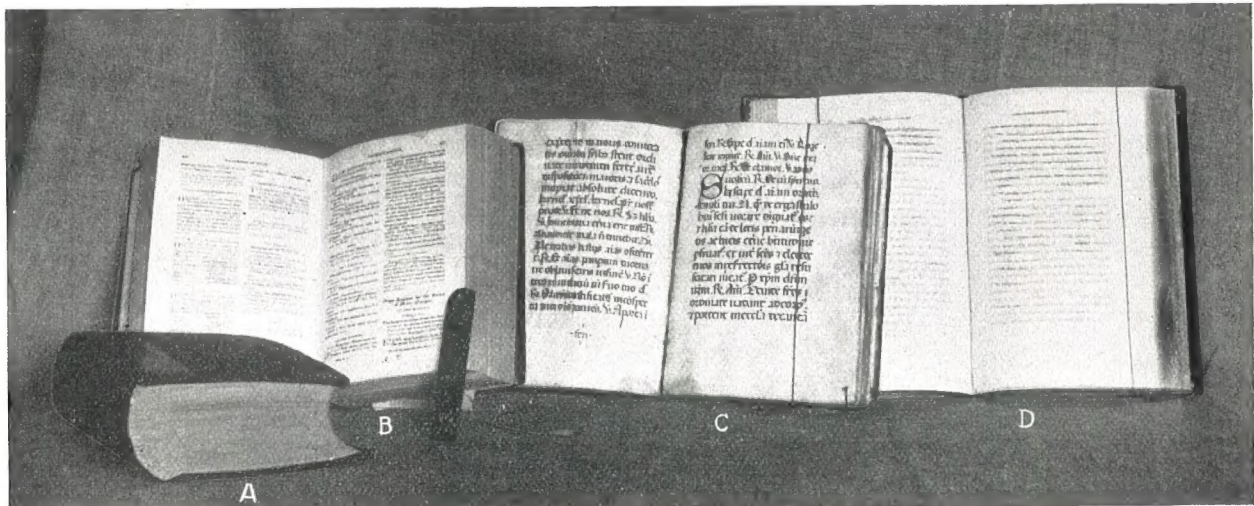


Fig. 1. A. Book with ugly curve of back and fore-edges—general sloppiness. B. Same book with margins badly cut, commercial work. C. Old, vellum, illuminated book, showing beautiful margins. D. Book cut in press, showing good margins, but lower margin trimmed too much for perfect proportions.

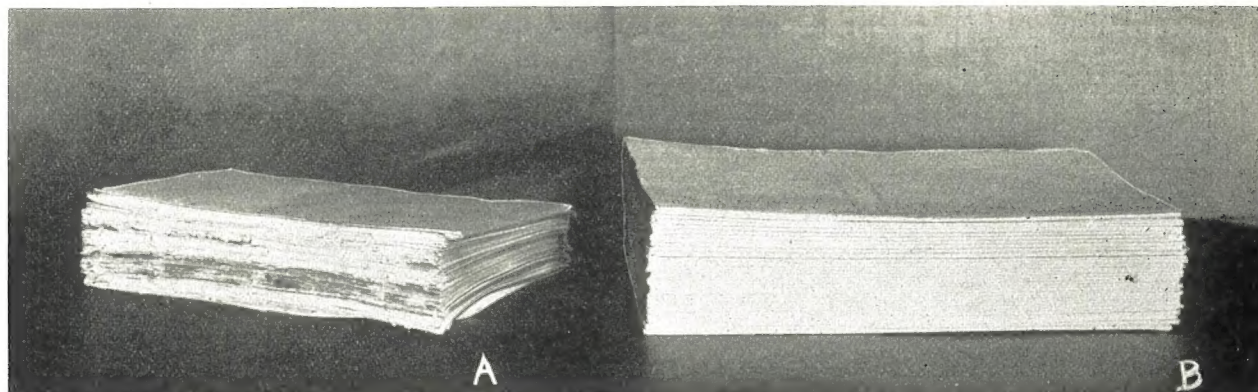


Fig. 2. A. Book taken apart, showing torn and rough condition of sheets; to be beaten out, mended and pressed.
B. After repairing, ready for sewing.

be "rough sewn." (See Cockerell, Chapter X for cutting in press, which is too elaborate for this article.)

7. Gilding, which is really a separate craft, usually not done in a bindery.

8. Sewing. (Figure 3.)

9. Backing. (Figure 5.)

10. Lining and cutting boards for covers.

11. Lacing in board covers.

12. "Head-banding" and setting head-bands.

13. Paring leather.

14. Covering.

15. Trimming.

16. Decorating.

Perhaps the advantage to the printed book of the careful handicraft process over the cheap and careless commercial one, consists as much in what is not done as in what is done to it. What a book lover most dreads is the sacrifice of margins. This, in almost all com-

mercial binderies is ruthless and wanton. And while, for nearly every other cruel assault upon the book there is some at least partial help, the sacrifice of margins is irremediable. Let us imagine (no imaginary case, but a heart-rendering experience) a beautifully printed breviary, with margins of something near the proportions you see in this old one (Figure 1, C). The book was in a temporary paper cover and a well meaning friend offered to have it bound. The confiding owner gave it up and received it back with *these* margins (Figure 1, B); two thick volumes bound into one, of ungainly bulk and a contour which soon appears as Figure 1, A). Tears of no avail; no delectation more, forever, possible to the eye.

Margins are cut by wholesale in commercial binderies with ruthless knives, mechanically worked.

In the handicraft process, they are either not cut at all, except the "heads," to even the top, if re-folding has been necessary, and to keep out dust; or they are cut by hand, section by section, the least possible and never down to the shortest sheets which are left as "proof" that the book has not been unnecessarily mutilated. Sometimes, instead of cutting at all, we file the edges a little to render them sufficiently smooth to take the gilding. This is done to the "heads" (tops), "fore-



Fig. 3. Sewing (Miss Kelley, the author's assistant.)

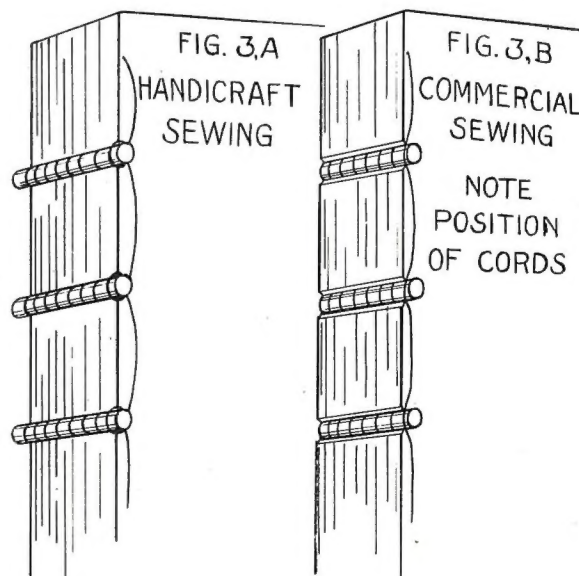


Fig. 3 A-B. Handicraft and Commercial Sewing.

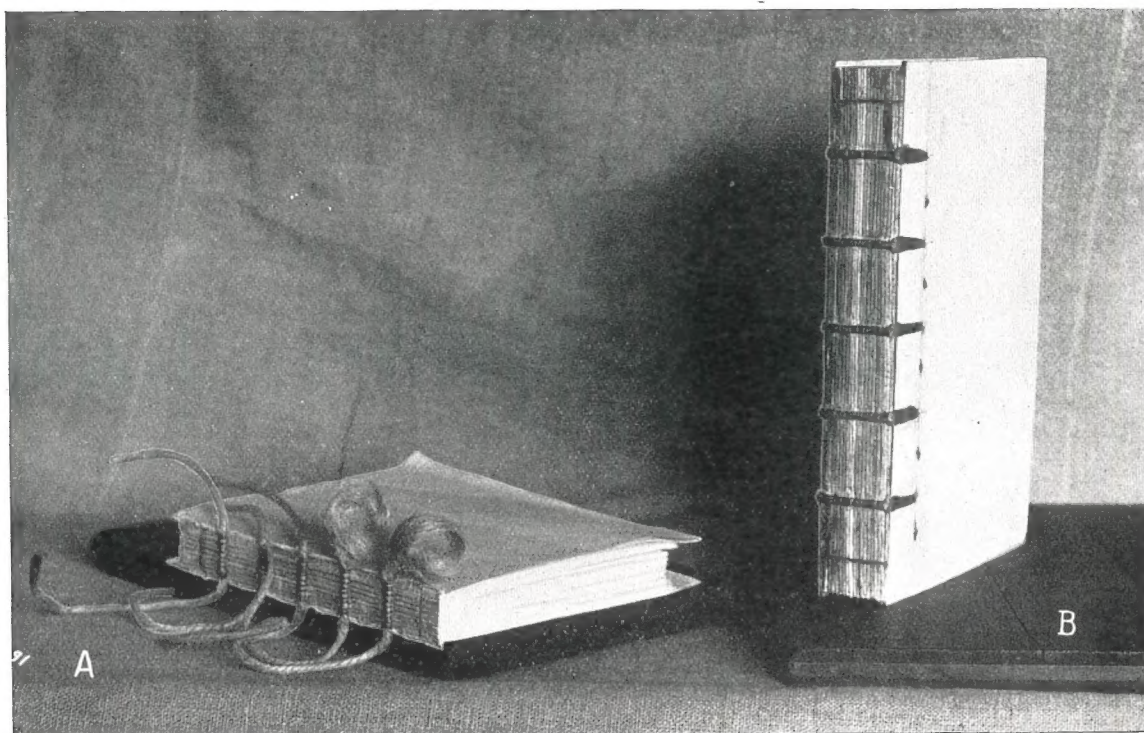


Fig. 4. A—Book sewn and backed; two cords fringed for lacing on boards; the other cords just as taken out of frame.
B—Book with boards laced on.

edges" and "tails" (bottom-margins) "jogged up" one after another before the book is sewn. That is, the heads are evened and filed; then the "tails" are evened and filed, letting the heads go uneven while this is being done; then the fore-edges of the separated sheets are "jogged up" and filed. After the gilding is completed, the heads are again jogged-up, the sheets "collated" (put in order in their sections) and the book sewn thus, leaving the leaves somewhat uneven at the fore-edges and tails, as in a rough-cut book, only less ragged and avoiding the raw

look of white edges which, in a sumptuously bound book, would be inharmonious. The perfectly smooth, polished, and, in appearance, solid metal surface, like the inner surface of a gold tube, which is the delight of the commercial binder is, to the taste of some, including my own, most unattractive.

The handicraft binder does occasionally for variety cut a book in the press. (See Figure 5, B, Cutting Press.) Some old binders even tooled patterns upon the smoothly cut edges of books—a process called gauffring. In our modern vernacular this would be termed a "fad" and as such should only be used to amuse, when the book offers a combination of margins sufficiently wide to have something to spare, sufficient beauty not to render this over-decoration too incongruous, and a value or rarity not too great to make any tampering with its margins unjustifiable. Personally, altho I have "gauffed" several books, I shall probably never do so again.

Figure 1, D, shows a book which I bound while a pupil at the Dover Bindery, the edges cut in the press. It had fine, wide margins, and even now has good ones. But I never look at it without noticing the lower margins which I cut too much.

Plates in books commercially rebound, are often cut absolutely "to the quick." The word "uncut" in book sellers' catalogs does not stand for a mere collector's fad, but is an assurance that the book has not been vulgarly defaced.

Another method of sparing a book is by "casing" it temporarily, if it is a book worthy of beautiful binding, on the assumption that it may be worthily and permanently bound later on. Instead of maltreating the back by beating the sections into angles which will



Fig. 5. Backing.

require them to be straightened again for rebinding, and filling them with glue which must needs be removed, perhaps tearing the paper and necessitating mending it (See Figure 2, A and B) the sections are left straight, and the book, without hinges or cords, is sewn on tapes. All the Kelmscott and Dove Press books are cased in this manner, either in vellum or light boards, covered with paper and with linen backs. The ordinary method of "backing" a book, (which should not be done until it takes its final, permanent form), consists of placing the sewn sections, held firmly between two wedge shaped boards, each board as distant from the back edge of the section as the thickness of cover. Thus placed, the back is gently beaten into a curve. The angle formed by the bent outer sections receives and fits the board covers and is called the "hinge." See Figure 5, backing. Also, see Figure 5, A, diagram of a book in press in process

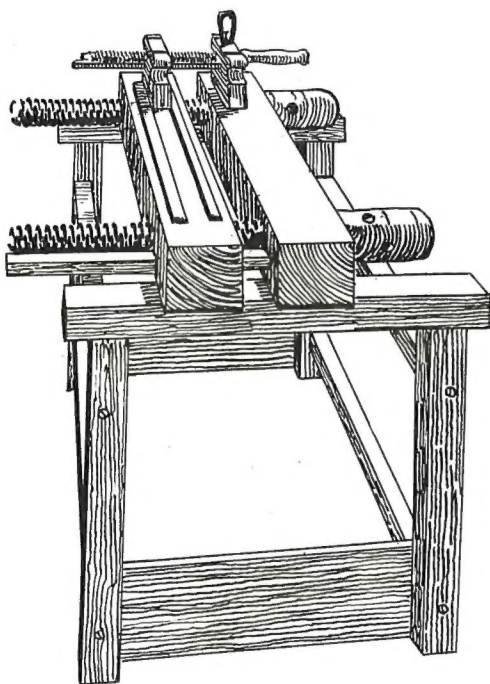
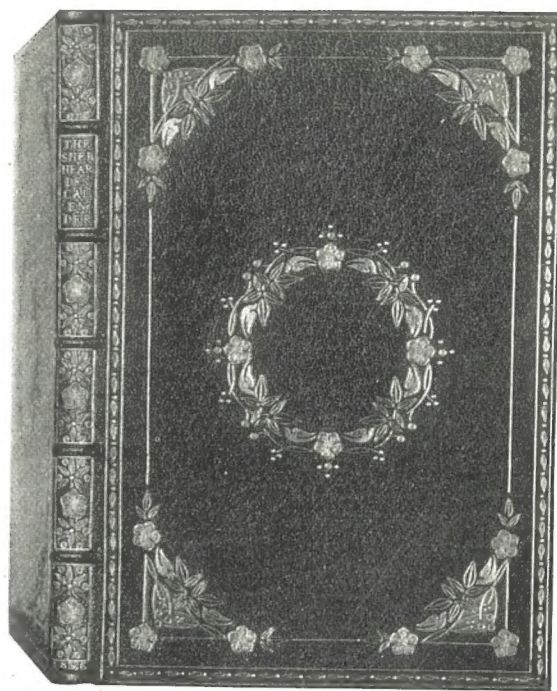


Fig. 5-B. Cutting and Backing Press—Cockerell.

of backing; also, Figure 4, book sewn and backed, showing hinge.

The commercial process of sewing differs from the handicraft method at the expense of the book. Sewing is perhaps the most difficult of all the processes to describe without demonstration. Cockerell, in his handbook, devotes eleven pages, with illustrations, to the subject of sewing alone. Obviously, this cannot be done in a series of short magazine articles designed, not to teach the craft of book-binding (the handbook, even, does not aim to take the place of instruction and practice), but to point out some of the main differences and the advantages of thoro and permanent workmanship over the cheap and temporary.

In both commercial and handicraft sewing, the sections which form the book (i. e. the group of folded leaves inserted within others, sometimes in twos but more often in threes, fours, and more) are attached together by threads which run longitudinally thru the



A Volume bound by the author; owned by Mrs. C. M. Blaisdell, Chicopee, Mass.

center of the sections, and to cords which run transversely across the back of the book. In handicraft sewing, these cords are on the outside of the book as is seen in Figure 3, which shows the book on the sewing frame, the sections, except the last, already attached to the cords which are stretched at equal distances from each other, between the "bed" of the frame and a parallel bar above it. The sections are one by one opened at the center (in Figure 3 the last is seen thus open); the threaded needle passes into it and out, drawing the thread (or silk) around the cord, as is shown in the cross-section diagram No. 3, A. The cords remaining on the outside of the book, and being ultimately covered with leather, form the bands on the back of the book which are considered part of the decoration. It will be seen (if the cross-section diagram is understood) that the thread being passed *around* the cord brings the strain upon the cord, and prevents the tearing of the paper when the thread is drawn up.

In commercial sewing a much smaller cord is used and hollows are sawn in the back of the book to admit it within the book's substance. This is shown in Figure 3, B (cross section diagram). The long straight line represents the back of the section. It will be seen (if

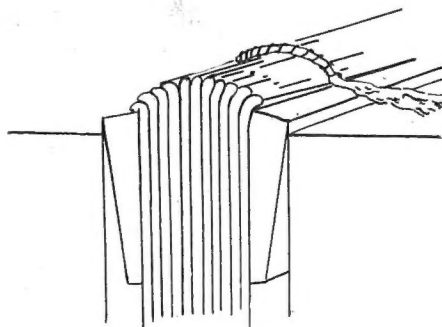
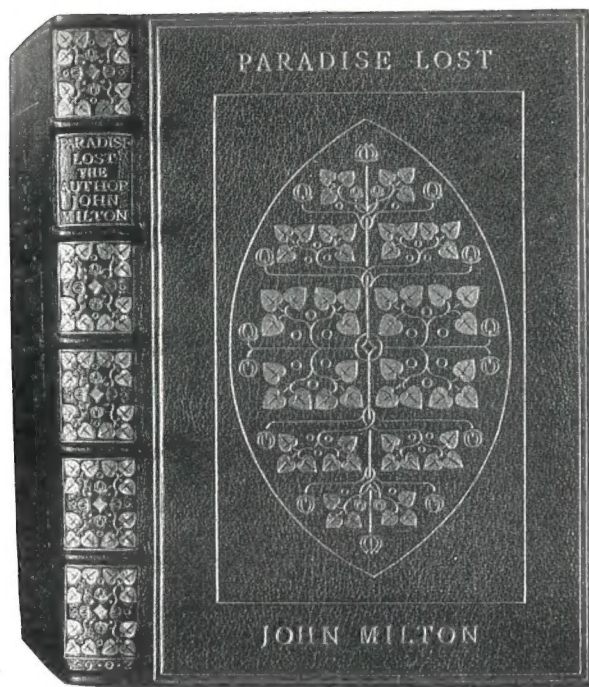


Fig. 5-A. Book in Press.

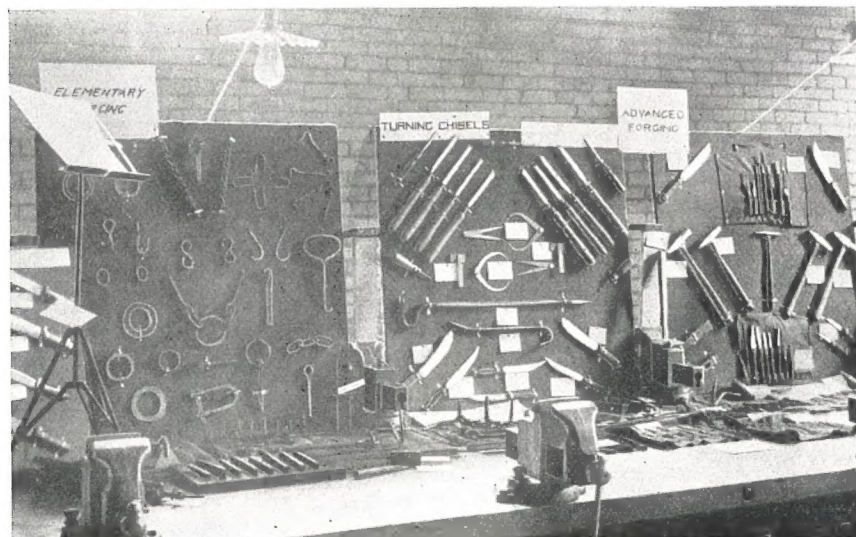


Binding Designed and Executed by Miss Starr. Owned by Dr. F. W. Gunsaulus, Chicago.

the diagram is understood) that, the cord being inside the section, it is not necessary to pass the thread around it, but it may be drawn straight thru the section be-

tween the cord and the paper. Of course, this saves much time, trouble and skill; but it injures the book very much. If the book should open to the center it would show these saw marks which are very disfiguring. When a book thus bound is properly rebound, all these holes must be mended. In commercial books of the more pretentious sort, the bands are *imitated* by false strips pasted on the back of the book, and covered by leather. That is, having first damaged the book by sawing into it and sinking the cords into its substance, which is justifiable only on the ground of saving time and money, because the product is not worth the cost and trouble, the effect of cost and trouble is sought by a deceitful imitation. Leaving the back of the book plain and un-mutilated is a thoroly respectable way of saving time and money. Hacking it unnecessarily with a saw, and then pasting wretched little detached pieces of leather upon it in fraudulent imitation of true, structural cords, which are the book's bones as it were, is cheap and vulgar. No pains are ordinarily taken to make the false bands on the surface coincide with the real cord within. And frequently the marks of the cords are seen through the leather at their points of attachment to the covers, *at quite different intervals and positions* from the false bands.

One of the beneficial effects of handicraft binding upon commercial binding is the tendency to abandon this sort of cheap and unreasonable imitation, and to omit processes when dispensable rather than do them badly.



Forge Work of Boys in Trade School and High School. Manual Training School, Saginaw, East Side, Mich. Walter F. Tippey, Instructor of Forge Work.

INDUSTRIAL ARTS DESIGN

VERTICAL SPACE DIVISIONS

William H. Varnum, University of Wisconsin

(Third Article)



NATURE and Need of Vertical Space Divisions. The design of the primary mass has now been considered under Rule 1 and its horizontal subdivisions under Rule 2. The next logical step would be the consideration of the nature of the lines that cross the primary mass in a vertical direction. In the original planning of the primary mass it was found that the horizontal bounding lines and the horizontal divisions were parallel to the base line of an object and that the base line was necessary to ensure stability. Vertical lines are necessary and equally important to give the needed vertical support to an object.

So accustomed is the eye to vertical lines in tree trunks, tall buildings and thousands of other examples that the upward eye movement in viewing an object, having a predominance of vertical elements, seemingly adds to its height.

The designer thus has a most useful device with which to increase the apparent height of an object that, for structural or other reasons must in reality not have great height. Article 2 drew attention to the influence of horizontal lines on a project. Vertical lines on an object are found to produce an analogous effect vertically.

Gothic cathedral builders used the vertical line, repeated again and again in buttresses, pinnacles and spires to give great apparent height to the building and to make it a unified vertical mass of great beauty. The modern church spire, together with the long vertical interior columns, similarly affects our present day church edifices.

This idea of repeating the vertical bounding lines of the primary mass by cutting the mass into vertical spaces is also useful in breaking up or destroying the monotony of large unbroken surfaces. Pilasters may cut the front of a building into interesting spaces, piers may break up the regularity of a long fence, legs and panels may each for the same purpose, cross a cabinet. While some of these may be structurally necessary and some not, they are all witnesses of the desire to produce beauty in design. As these examples are so numerous in the industrial arts, it is well to study in detail their proper adaptation to our needs.

One Vertical Space Division. Upon analyzing one vertical space division, it will be found to be a primary mass, vertical in character and governed by Rule 1a. Figure 25 illustrates one vertical division. The foot is an appendage to be considered in Article 4.

Two Vertical Space Divisions. Rule 3a. If the primary mass is divided into two vertical divisions, each division should be equal in area and similar in form. Exception may be made in case of structural requirements. By imagining two adjacent doors of equal size, the design effect of two vertical divisions may be made clear. Plate 11 illustrates a rectangle (A) divided in

this manner, preliminary to the development of a problem. Figure 27, Plate 12, represents the type of object to which the exception to the rule may be applied. In the design of this desk, the structure practically prohibits two equal vertical divisions, necessitating a minor division in the section occupied by the drawers.

Two Vertical Space Divisions in Wood. In Plate 12, Figure 26, the designer had his vertical spacings dictated by service in the form of two doors. As service demands a tall vertical primary mass, it is but natural to design the doors to conform with the primary mass. This gave a monotonous long space for the glass panels and structural weakness. To relieve this he applied Rule 2a and crossed the vertical panels by horizontal subdivisions, relieving the monotony and still retaining the unity of the primary mass.

In Figure 27 his problem was a variation of Figure 26. Structurally limitations called for unequal divisions of the vertical space arrangement. The left portion of the desk becomes dominant as demanded by service. The drawer or brace is necessary in this design as it acts as a sort of link, binding the two vertical legs together. The omission of the drawer would destroy the unity of the mass.

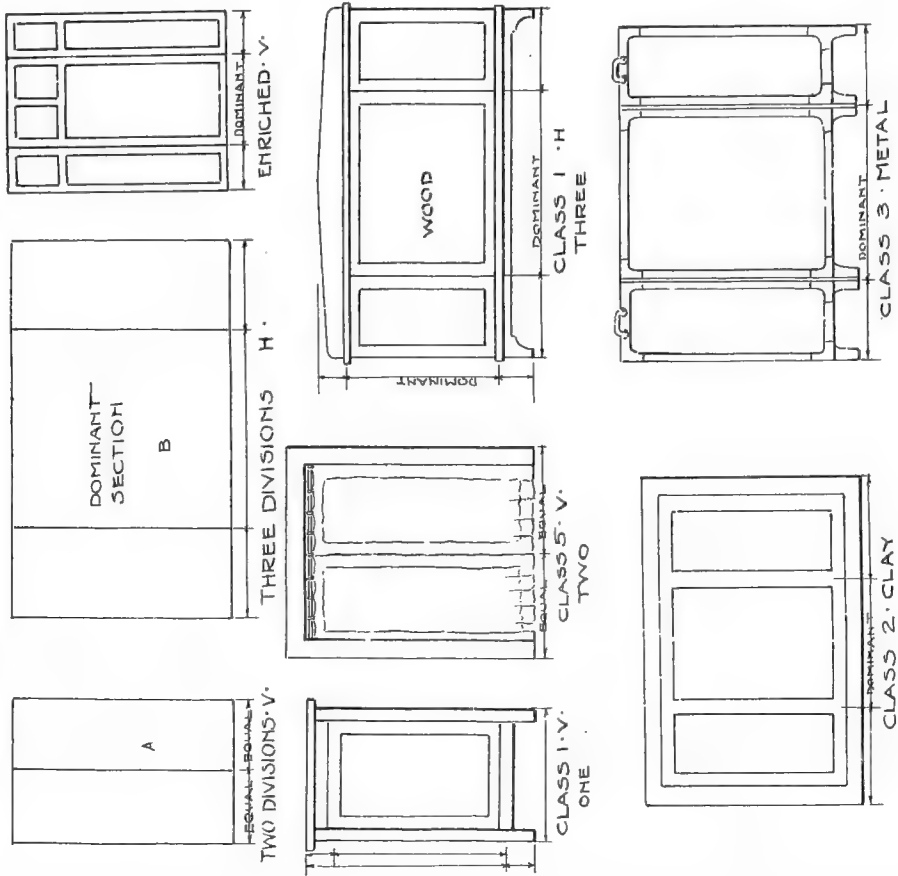
Two Vertical Space Divisions in Clay. As vertical space divisions are principally applicable to rectilinear or flat objects and moreover as it is in such forms only that they have structural value, they are not commonly met in cylindrical pottery ware. They are, however, occasionally used in architectural tiles and other flat wall objects. As three divisions are much more commonly used, this material will now be left for later consideration.

Two Vertical Space Divisions in Metal. Vertical spacings in metal are quite similar to space divisions in wood. Wrought iron fences are, by reason of structural limitations composed of vertical and horizontal lines, varied by the introduction of piers and curved members. As they are typical of a certain branch of iron construction, two designs of the Anchor Post Iron Company have been introduced. Figure 32, Plate 14, represents two vertical divisions equal to one another because of structural and aesthetic demands. The piers in this instance form a part of the general design of the entire gate and must be considered accordingly.

The vertical subdivision in Figure 32, Plate 14, has been repeated or echoed by the long vertical bars, alternating with the shorter ones and producing pleasing variety. The horizontal subdivisions are designed according to Rule 2b. In designing the newel lantern in Figure 34, (Popular Mechanics Handbook) the designer was required to form a vertical primary mass to conform with the similar mass of the post. This he determined to subdivide vertically in practically the same manner as the cabinet in Figure 26. Threatened with the same monotony he has met the situation by subdividing

APPLIED AND CONSTRUCTIVE DESIGN

PRINCIPLE 3: VERTICAL SPACE DIVISIONS OF THE SINGLE H OR V PRIMARY MASS.
PROBLEM: VERTICAL SUB-DIVISIONS IN CLASSES 1-2-3. THEY ARE USED TO
BREAK OR VARY LARGE AREAS OF HORIZONTAL OR VERTICAL MASSES.



DRAW THREE DESIGNS IN ONE OF THE DESIGNATED CLASSES.
DESIGNS SHOULD HAVE A DISTINCT DOMINANCE OF EITHER
V OR H AND INCLUDE 1-2 AND 3 VERTICAL DIVISIONS.

THIS SHEET IS INTENDED TO SHOW THE TYPE OF PROBLEM IN
THREE MATERIALS AS A GAUGE FOR POSSIBLE CLASS ASSIGNMENTS.

Plate 11.

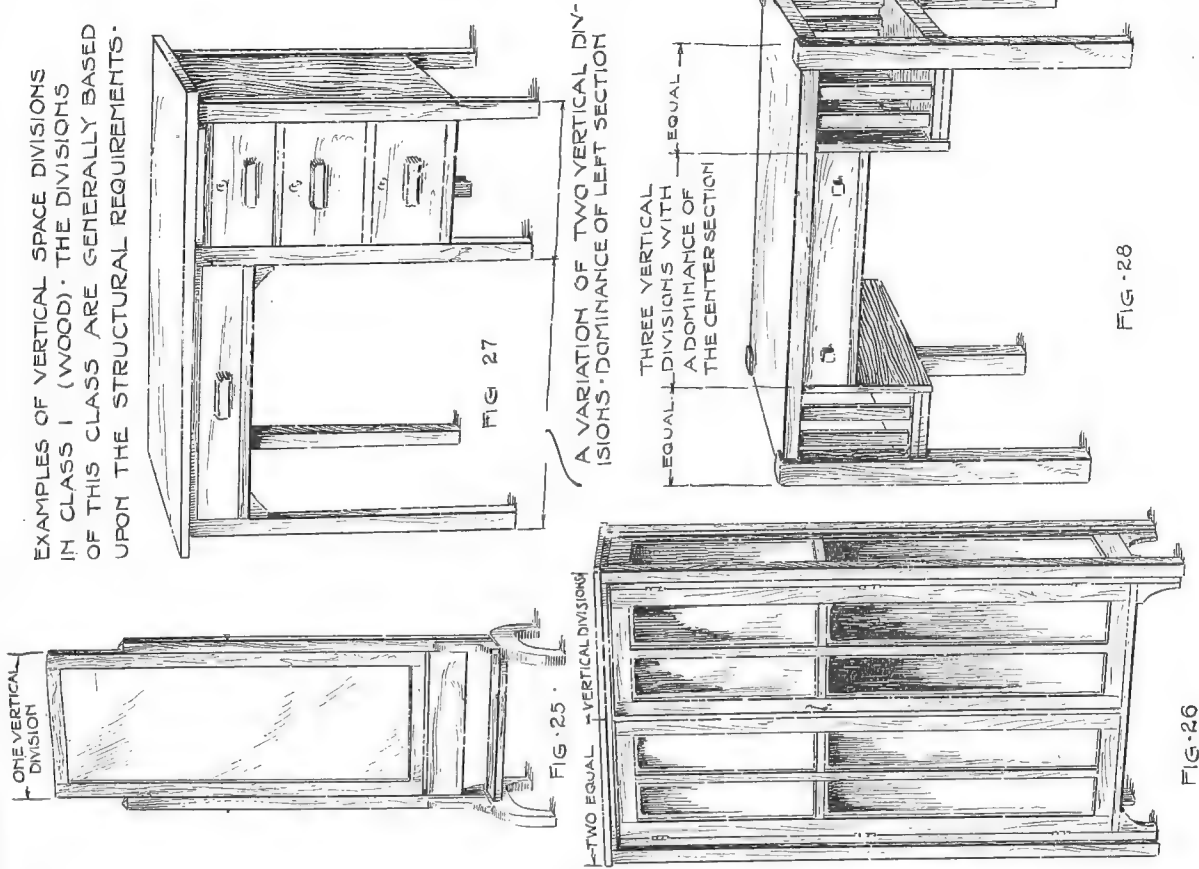
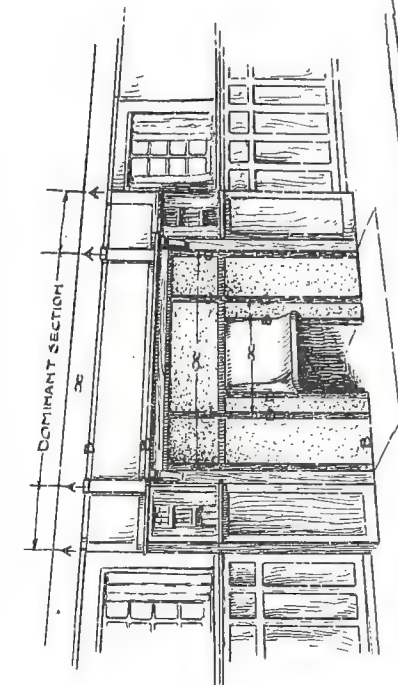


Plate 12.



NOTE THE REPETITION OF
THREE 'V' SPACE DIVISIONS
IN DIFFERENT MATERIALS AT D.

FIG. 29

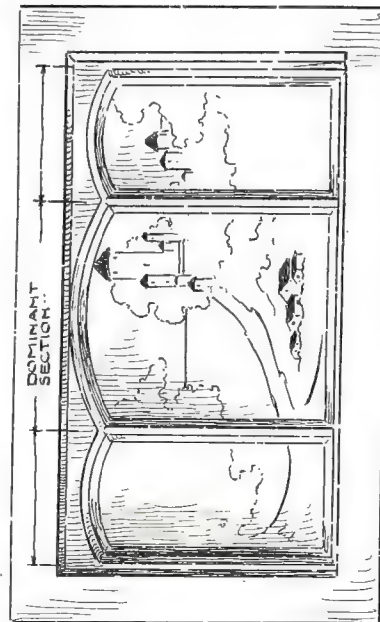


FIG. 30

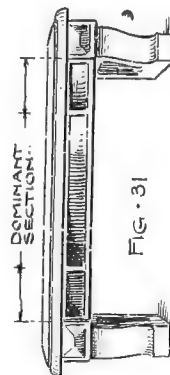


FIG. 31

EXAMPLES OF VERTICAL SPACE DIVISIONS
IN CLASS 2. CLAY AND CEMENT...

Plate 13.

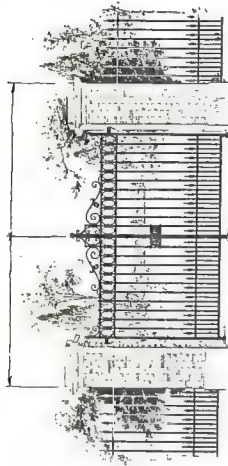


FIG. 32

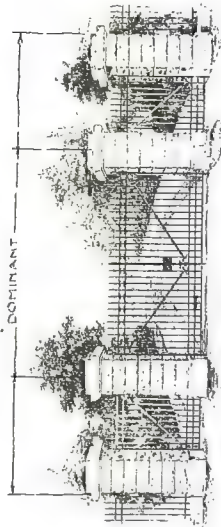


FIG. 33

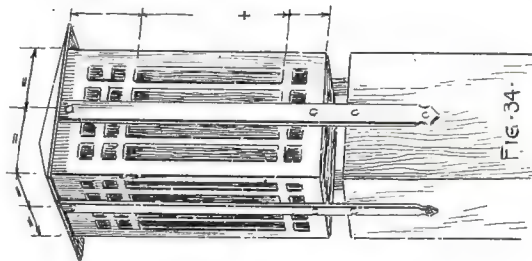


FIG. 34



FIG. 35

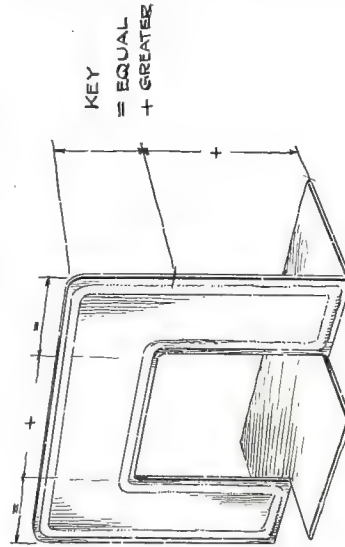


FIG. 36

KEY
= EQUAL
+ GREATER

EXAMPLES OF TWO AND THREE VERTICAL
SUBDIVISIONS IN CLASS 3 (METAL)...

Plate 14.

the vertical sections into three horizontal divisions in accordance with Rule 2b. The structural supports, however, rising up in the center of this mass destroys its unity. They would have carried out the lines of the structure of the newel post and continued the lines of the lantern better, if they had been attached to the corners rather than to the sides of the newel post.

The size of the main building holds the wings to it, thus preserving the unity of the structure while equal divisions on either side give balance. Plate 11 (B) gives an example of a rectangle divided in this manner. This three-division motive is a very old one. In the middle ages painters and designers used three divisions or a triptych as it is called in their altar decorations. A

THE EVOLUTION OF A DESIGN INVOLVING THE USE OF
TWO HORIZONTAL AND THREE VERTICAL SUBDIVISIONS
THE COMPLETED PROBLEM.



FIG. A. THE HORIZONTAL AND VERTICAL DIVISIONS ARE BASED UPON STRUCTURAL REQUIREMENTS.

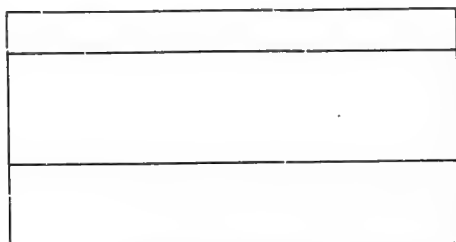


FIG. B. THE PRIMARY MASS WITH TWO HORIZONTAL DIVISIONS. RULES 1 & 2.

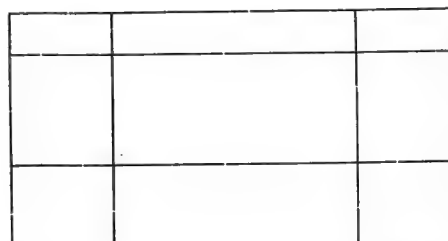


FIG. C. THE ADDITION OF THREE VERTICAL DIVISIONS. RULE 3 b.

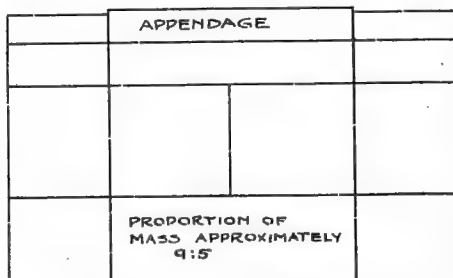


FIG. D. THE ADDITION OF SUB-DIVISIONS AND APPENDAGE. RULES 3 AND 4.

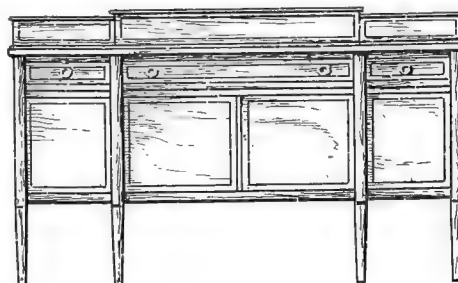


FIG. E. ADDITION OF DETAILS AND ENRICHMENT.

FOR SHOP WORKING DRAWINGS: ONE-HALF OF FIG. E. SHOULD NOW BE ENLARGED TO A FULL-SIZE PENCIL DRAWING WITH CONSTRUCTION AND PARTIAL END VIEW ADDED.

Plate 15.

Three Vertical Space Divisions. Rule 3b. If the primary mass is divided into three vertical divisions, the center division should be the larger, with the remaining divisions of equal size. A large building with a wing on either side, will give an idea of this form of spacing.

painting of the Virgin was usually placed in the center division with a saint in each of the remaining panels to the right and left. Designers and mural decorators have been using the triptych ever since that period.

Three Vertical Space Divisions in Wood. The desk

in Figure 28, Plate 12 is a good example of the three space rule. The drawer in the center forms the mid or dominant section and by its greater length holds the two smaller sections together. This design is better than Figure 27, which has a similar mass. The prominent vertical lines in Figure 27 counteract and destroy the effect of the long horizontal dominant lines of the table top, whereas in Figure 28, the vertical lines in the center of the design are so short that they do not interfere with the horizontal lines of the table top. Figure 28 supports the horizontal tendency of the primary mass while Figure 27 neutralizes or practically destroys its character.

Three Vertical Divisions in Clay and Cement. Figure 30, Plate 13, represents an overmantle by the Rookwood Potteries. It is typical of a type of overmantle which may be developed in tiles or in cement, forming an agreeable contrast with the brick of a large fireplace. The three divisions or triptych should be proportionately related to the opening of the fireplace and to the enclosing mass of brick or wood work. We will consider Figure 29 to show how this may be carried out.

Figure 29 bears a strong resemblance to Figure 12, (Article 2) and is an elaboration of a simple three-division theme of spacing. The design seems to be complex until it is analyzed into two rules. The primary mass of the entire fireplace motive (including the surrounding panelling) has first been planned with strong and prominent horizontal lines. This was then divided vertically (A) to conform with Rule 3b, the three division theme), giving the divisions for the bookcases and mantle. The horizontal divisions (B) were then constructed within the remaining space, effecting the distance from the picture moulding to the mantle and from the mantle to the floor line, in accordance with Rule 2a. That left the space of the width of the cement work to be subdivided again by Rule 3b (C), while the top of the wainscoting panels re-echoed the previous horizontal divisions of Rule 2a. The fireplace opening merely carries out at D the same proportionate relation that dominates all vertical divisions (3b) while the wainscoting follows the general horizontal divisions of 2a. By this method we have variety in spacing and unity thru repetition of similar rules of proportion.

The cement bench (Figure 31) has a three division arrangement to break up the monotony of the long rail, and at the same time to repeat the characteristics of a horizontal primary mass.

Three Vertical Divisions in Metal. Figure 33, Plate 14, is a common example of three vertical divisions in metal suggested by the needs of service. Figures 35 and 36 are thin metal problems. The familiar pen tray is primarily a horizontal mass, so determined by its required service as a pen holder. The projecting handles form the outer divisions and the spacing motive, (3b) has been repeated in the raised projection decorating the handles. The book rack in Figure 37, is an example of the manner by which a nearly square mass, so designed for structural reasons may, by Rule 3b and 2a, be broken into a fairly pleasing arrangement of divisions.

More Than Three Divisions. Rule 3c. In elementary problems, if more than three vertical divisions are required, they should be so grouped as to analyze into 3a, 3b or be exactly similar. The eye becomes confused by a multitude of vertical divisions and it is much better designing to keep them within the number stated in this article. There are instances, however, when this is impossible. Under those conditions the following treatment should be adopted:

Unless, as stated, a large number of vertical divisions may be grouped into two or three vertical divisions it is better to make all of the divisions of the same size. This does not fatigue the eye as much as would be done by the introduction of a number of complex spacings. This solution enables the amateur designer to deal with complex problems with an assurance of securing a degree of unity.

Influence of Tools and Materials. The lathe and potter's wheel do not enter into elementary technical requirements of the problems of vertical spacings. The processes involving rotation upon an axis are more fitted to horizontal divisions (Article 2). Panels, legs, brick, cement and stone piers, fences, cement posts lend themselves naturally to the vertical subdivisions. Generally speaking, tools and processes capable of producing flat planes are suitable to the elementary steps in vertical space relations.

The Evolution of a Design Including Vertical Divisions. Plate 15 is practically self-explanatory and shows the order in which the various divisions so far considered are to be introduced into the design together with the grouping of details within those divisions. Figure D introduces the additional element termed the Appendage. The various forms of the appendage will be considered in Article 4.

Printing is really that philosopher's stone sought for ages by the ancients. It is the foster-mother of great riches, the developer of trade, the keystone of the circle of progress. It transmutes ideas, energies and ambitions into gold. Shall the printer measure his product as another does his butcher's meat?

H. L. Bullen.

Control of the German Vocational Schools

Frederick W. Roman, Syracuse University



HERE seems to be practical unanimity among investigators that the vocational schools have played a great role in the industrial and commercial progress of Germany. That country's development of the last three decades has equalled, if not excelled, that of the United States. This fact becomes all the more worthy of our attention when we consider that Germany is a country one-fourteenth the size of the United States, with about two-thirds our population. To this we must add that the natural resources and the fertility of the soil are not nearly equal those of our own country.

The excellence of the German schools has created a profound respect in this country, as is evidenced by the great and worthy movement in the United States which is attempting to adopt such parts of the German System as can be made to harmonize with our own school organization.

German Public Schools.

To understand the organization of the industrial and commercial schools, a brief statement with reference to the public schools is necessary.

School is in session 40 to 42 weeks in the year; and the number of school hours in the week are from 20 to 22 in the lower grades, and about 30 in the upper grades.

As a rule the sexes are taught separately. However, in communities where the Catholic and Protestant religions are both represented, it is thought more important to separate the children on the basis of religious affiliation, even if by so doing it becomes necessary to establish co-educational schools on account of the small number in attendance.

The public schools are attended by 90.8 of all the children between the ages of six and fourteen years of age. The remaining 9.2 attend the higher schools. The average public-school attendance of all the children of the Empire is 213 days a year. Some records showing the percentage that complete the various grades are submitted:

The public schools of Chemnitz, one of the leading manufacturing cities of Germany reported, for 1909, as follows:

More than 94 per cent complete the sixth grade.

More than 76 per cent complete the seventh grade.

More than 50 per cent complete the eighth grade.

In the year 1912-13, 57 per cent of the boys and 65 per cent of the girls actually completed eight grades. In Berlin in 1913, 50.6 per cent completed eight grades, whereas 81.3 per cent completed six grades.

When we compare German figures with those of the United States, we find that for every day that the American child is in school, the German child attends two and one-half days. For every child that passes a grade here, more than two pass the corresponding grade in German schools. Furthermore, it can be easily shown that the German child knows more when he completes a grade than does the American child graduating from the corresponding grade.

Instruction After the Completion of the Public-School Course.

After the public-school course has been completed, practically all the boys and girls seek some kind of employment which will enable them to become as self-supporting as possible. Save in certain sparsely settled districts they still enjoy certain educational advantages. In this way their education is prolonged for two, three or four years. The number of hours a week that the pupil attends, varies from six to twelve.

Note—This paper was read before the Vocational Education Association of the Middle West, February 5, 1915. The author lived for several years in Germany and received his Doctor's Degree from the University of Berlin. The subject of his Doctor's thesis was "Industrial Education".

The subjects studied have a direct bearing upon the occupation of the pupil. This gives rise to various types of industrial, commercial, agricultural, and domestic science continuation schools.

How are these German Schools Controlled?

In some quarters of our country a lively discussion has arisen as to how these German schools are controlled.

American investigators who have gone to Germany, do not seem to be fully agreed as to what the German experience would teach us, in the way of controlling our own industrial and commercial schools. Readers, no doubt, are quite familiar with the so-called dual and unit-control system.

The proposition of those who favor the dual control has been quite clearly stated by Dr. Edwin G. Cooley, who says that these "schools should be separate, independent, compulsory day schools, supported by special taxes, carried on usually in special buildings, administered by special boards, of practical men and women." In addition to this, Dr. Cooley agrees with Mr. Charles C. McCarthy who drafted the report of the Wisconsin commission, when he says, "the Germans have established, almost universally, local committees of businessmen, manufacturers, and workmen, who control these schools wherever they are."

This statement I must challenge as being highly misleading, and one that scarcely in any degree whatever represents the real German experience. In Germany there is very little local control of schools, or anything else. The authority in all lines is highly centralized. The organization of the Empire and of the individual German State supports my contention.

The German Empire is composed of 26 states. Kaiser Wilhelm II, as Emperor of Germany, has little power, but as King of Prussia he is in position to rule all Germany. It is true that the German Reichstag of 397 is elected by the people. Even that is not wholly democratic, because the number of representatives to each election district has become grossly unequal in proportion to the inhabitants of the districts. By reason of the tendency of the city constituencies to return to the Reichstag socialists or other radicals, the Government has never been willing to allow a redistribution of seats. The legislative functions of the Reichstag are, in practice, distinctly subordinate to those of the Bundesrath, which is composed of 58 delegates appointed by the princes of the monarchical states and the senates of the free cities. The King of Prussia appoints seventeen for Prussia, two for Brunswick and one for Waldeck. This gives him an absolute control of twenty votes in the Bundesrath.

Any proposal to amend the Constitution may be checked by as few as fourteen votes in the Bundesrath—whence it arises that Prussia has an absolute vote on amendments. No change may be made relating to the military affairs, the navy, the tariff, and various consumptive taxes without the consent of Prussia. Prussia has the chairmanship of all standing committees in the Bundesrath. The King of Prussia is in supreme command of the army and navy. Besides, Prussia enjoys an immense moral force due to its lead in organizing Germany, and also to its preponderance of population over the remaining German states.

The same centralization of authority which we see in the organization of the empire is also characteristic of each individual state. Each German state has a two-chambered legislative body. The upper chamber is filled by direct appointments of the crown, or by heredity. This upper chamber is universally in position to block legislation which may be proposed by the Lower House which is elected by the people. The Kingdom of Prussia illustrates the case which is typical for all the states. The Herrenhaus in Prussia is composed of about 400 members, the

majority of whom are appointed by the King. Since the Lower House cannot pass any laws without the agreement of the Upper House, it means that the King of Prussia controls absolutely all legislation. Now even the Lower House is not a democratic body. In Prussia the voters are divided into three classes according to their wealth. Enough voters are put into the first class to make the sum of the taxes paid equal to one-third of the whole tax raised. Enough more are taken to make a second third of all taxes paid; all others form the third class. In 2,214 districts in Prussia, one man owns enough property to enable him to appoint all the electors of the first class. In 1,703 districts in Prussia two men own enough property to enable them to appoint all the electors of the second class. To sum up the whole situation, we may say, that three per cent of the voters in Prussia appoint one-third of the electors, and that the second third of the electors are appointed by eight per cent of the voters, so that the remaining 87 per cent of the voters have the right to appoint the last third of the electors.

At the Prussian elections of 1908, a Social Democratic vote which comprised approximately 24 per cent of the total vote, yielded but seven members in a total of 443.

These facts prove conclusively, that the local control of the schools, as stated by Mr. McCarthy, is wholly out of

ordinance of the community or local guild for boys under the age of 18 years, and since 1911 the law has been extended to apply to girls as well. Pupils are excused from attendance upon a continuation school founded by statutes, if they are in attendance upon a guild school or other trade school, whose curriculum has been credited as being equivalent by the authorities.

Guilds are granted the special privilege of establishing institutions for advancing the industrial, technical and moral development of master workmen, journeymen and apprentices; the right to support and supervise these schools lies also within their province.

Chambers of trade are empowered to erect and support institutions for the advancement of the industrial, technical and moral development of journeymen and apprentices.

From the table which we here present, we see that Prussia and Hessen have a dual school organization. Bavaria and Württemberg have put the trade schools in charge of the state department of education, which also controls the public schools.

In Saxony, the obligatory continuation schools are under the Ministry of Churches and Schools, whereas the voluntary commercial and trade schools are under the Ministry of Interior.

In Baden the industrial continuation schools were put

CONTROL OF INDUSTRIAL EDUCATION IN THE GERMAN STATES.

State	Department of the State	Division of this Department	Next Ranking Officer in Charge.	Local Control
Prussia	Ministry of Commerce and Industry	A special bureau (Landesgewerbeamt)	Government Superintendent (Regierungs-Präsident)	Inspectors Regierungsund-Gewerbeschulräte
Bavaria	Ministry of Schools and Churches	.....	.....	District School Inspectors and Directors of the Higher Schools
Saxony	Ministry of Interior	.....	.....	Industrial School Inspector and Commercial School Inspector School Board
Württemberg	Ministry of Education	Commission of Industrial Education (Gewerbeoberschulrat)	Assistant Council (Beirat)	Advisory Board
Baden	Ministry of Interior Ministry of Education	A Special Bureau (Landesgewerbeamt) Trade School Supervisor	.....	Local Board Trade School Inspector
Hessen	Ministry of Interior	Trade Bureau	.....	Trade School Inspector

harmony with the organization of both the Empire and the individual states. The friends of the dual control system are attempting to find a democracy in Germany which we see must be entirely foreign to the whole spirit of German government.

The spirit in which the German laws are administered is even more autocratic than the letter of the law would indicate: The crown appoints the Ministers. These Ministers are not subject to any legislative body. They have no one to please except the King. If the legislative bodies give an adverse vote to the policy of a Minister, it is not customary for him to resign as is usually the case in other states of Europe.

The two elements which count for most in German administration are wealth and birth. A people who would tolerate such government organization are not likely to enjoy local control in school matters. My contention will be demonstrated still more closely and effectively by an examination of the school laws.

School Laws of the Empire.

By the law of the Empire, compulsory attendance upon a continuation school may be established by an

under the Minister of the Interior in 1905. Only one type of schools was affected by the change. The control of the commercial continuation schools, of the continuation schools for agriculture, and of the schools for domestic science was not changed.

In Prussia, we find a unique situation which must be changed before decided advancement can be made in further trade school development. The Ministry for schools and churches which controls the public schools, is always headed by a theologian, that is, a man who has gone thru a seminary and has had long experience as pastor and officer in church circles. For this reason the public-school system is very conservative in all that it teaches. Religion, as a study in the curriculum, is strictly insisted upon for one hour per day thruout the school courses.

In 1884, the industrial schools of Prussia were transferred from the Ministry of Schools and Churches to the Ministry of Commerce and Industry. This move represented one of Bismark's successful efforts to get something completely out of the hands of the clergy, with whom he usually quarreled. Industrial education has made some great strides since the establishment of the dual organization, but only insofar as it has been possible to develop

under the legislation which was in force at the time of the separation. The dropping of religion from the curriculum, and the emphasizing of the practical rather than the bookish studies, offended the clerical party. This, in turn, has resulted in a constant warfare between the two factions ever since. Up to the present time, Prussia has not been able to get legislation making industrial education compulsory, except for the provinces of West Prussia and Posen. The two parties cannot agree on the question of religion. Both parties want to make attendance compulsory from the ages of 14 to 17. The clerical party wants a guarantee that one hour per week shall be given over to their hands for religious instruction. The other party claims that religious teaching has no place in a trade school. As it is now, only the districts or communes can make attendance compulsory.

As shown in the table, the Prussian schools are under the *Landesgewerbeamt*, which is composed of five members appointed by the Minister. In addition to these, there are twelve extraordinary members. There is also an advisory board composed of 70 members, selected from members of the Prussian legislature, mayors of cities, representatives of industry and commerce, trade schools, directors, representatives of leading educational and technical organizations, and several other societies.

This larger body meets once in two years, for a period of several days, to discuss all kinds of questions connected with the schools. The questions for discussion are submitted by the Minister of Commerce and Industry. After he gets their advice he does as he pleases.

The control of the schools is placed under the regular board of five members, who receive their appointment from the Minister of Commerce and Industry. The duties of this board are as follows: To arrange the curriculum, the examinations, to prescribe the methods of instruction, to provide the material necessary for instruction, to appoint the directors and teachers, to prepare plans for the further training of the teachers, to supervise the construction of new buildings and to recommend the budget. This board is to keep itself posted as to the capability of the directors and teachers and to report on the efficiency of the school in every detail.

There is, then, no local control whatever. This applies to more than three-fourths of all the commercial and industrial continuation schools in Prussia. Let it be remembered that the friends of the "dual-control" system cite Prussia as their best example. Their wholly erroneous conclusion, lies in the fact that they substitute local dual control here, for the state dual control which they found in Prussia.

Next let us consider the remaining one-fourth of the industrial and commercial continuation schools of Prussia.

There are certain types of Industrial schools established by guilds and chambers of commerce that are controlled by local boards. One of the finest of this type is the commercial school in Berlin. It receives no state or municipal aid. All expenses are paid to the chamber of commerce. There are several types of industrial schools in Berlin, the expenses of which are paid entirely by the guilds. Schools of this type would, of course, be no argument for a two-board school system in the United States, where the state and municipality bear the expenses. Even these schools are not wholly free from state influence, because the state allows them to exist only because they are at least equal, and most generally more advanced than the ones required by the state law.

The remaining fraction of the one-fourth is made up of guild schools that do receive some state aid. In such cases the state assumes control, altho the local board continues as a sort of advisory and honorary body.

In the light of those facts, how is Dr. Cooley warranted in saying that "everywhere, but in Bavaria, these schools are directed by a board or committee on which the commercial or industrial interest is given the controlling power?"

Where is the warrant for Mr. McCarthy's statement that "the Germans have established, almost universally, local committees of businessmen, manufacturers, and workmen, who control these schools wherever they are?"

Above these continuation schools, there is another type called "Fachschulen." These trade schools are intended to train master workmen and men who expect to be superintendents of factories. Tuition is charged and attendance is voluntary. The course requires the full time of the student for a period of two to four years. The schools are open to those who have completed the work of the continuation schools, or to those who have had five or six years in a "Realschule." There are two classes of "Fachschulen." The state trade school is controlled by the director and a board representing the municipality. The law states expressly that the director is not under this board. When there is disagreement, the issue is settled by the Minister. This board gives advice with reference to new buildings, arrangement of curriculum, appointment of teachers, amount of the budget, and on any other question that may be submitted by the Minister. The director and teachers are appointed by the Minister.

Another class of those "Fachschulen" is the municipal trade school, which receives a state subsidy. Such a school is controlled by a board of seven members. The mayor of the city, three members appointed by the municipality, and three more appointed by the Minister, constitute the board. This board is responsible to the "Landesgewerbeamt," which has final jurisdiction over the appointment of directors and teachers, the organization, and curricula of the schools, the construction of new buildings and the amount of the budget. Hence we see that local control, beyond giving counsel, finds little support even in these higher-class industrial schools.

Baden.

In 1905, the industrial continuation schools were put under the Minister of the Interior. The change was made to establish a closer connection between these schools and the *Gewerbe und Fachschulen*. The latter are recruited to a limited extent by the former. The former aims to teach the mass of workers; the latter prepares foremen, superintendents, and captains of industry. Now, if in this country, we could put our industrial schools under the same control that such schools have in Baden, there would be some good sense in separating them from public-school management, because in that case one could be sure of intelligent supervision.

The advocates of dual local control in this country, can find no encouragement in the change made in Baden, because the schools were taken from the Ministry of Education so that they might be governed by the same board which governs the higher technical schools. It was not done in order that these schools might be governed by a "board of 'so-called' practical men." These schools are governed, in the main, by a board called the *Landesgewerbeamt*. This is not a local board. Each school has a local board whose functions are largely advisory. Director Sierck, editor of the school journal, *Zeitschrift fuer das gesamte Fortbildungsschulwesen in Preussen*, says: "Seine Befugnisse sind durch die bestehenden detaillierten Vorschriften und durch das weitgehende Aufsichtsrecht der vorgeordneten Behörden ziemlich beschränkt."

The control of the commercial continuation schools, the continuation schools for agriculture, and schools for domestic science still remain under the Department of Education.

Saxony.

Whereas no great change has been made in control of the industrial schools in the last decade, it will be interesting to note a tendency to do away with the dual system in Saxony. The Journal "Die Fortbildungsschule" (Leipzig), April, 1911, contains an article on "Der Dualis-

1. Its functions are considerably limited by the existing rules and by the broad powers of the higher authorities.

mus im gewerblichen Unterrichtswesen." There the "Sachische Fortbildungsschulverein" and the "Sachische Lehrerverein" have both come out for a union of the two types of control. After giving the usual arguments for union, the paragraph closes by stating, "Eine Verschmelzung beider Schularten kann allen Beteiligten nur zum Segen gereichen."² Then the article continues to give examples where the union has recently been carried thru in such cities as Chemnitz, Plauen, Annaberg, und Zittau. The article closes by stating "Also der Weg zur Beseitigung des Dualismus ist gezeigt und beschritten."

Some months ago Hugo Steinert, editor of "Die Fortbildungsschule," wrote a letter to the author in which he stated, "There reigns an unfortunate dualism in Saxony." In some cases, I am informed, there has resulted a duplication of courses because of the rivalry and jealousy that has arisen between the two types.

Wuerttemberg.

In Württemberg the Ministry of Schools and Churches has control of all the schools. The next highest authority which controls the commercial and industrial schools is a board called the Gewerbeoberschulrat. This board is composed of a member of the Department of Commerce and Industry and other members appointed by the King. The law required this board to look after the higher supervision, as may be directed by the Ministry of Schools and Churches. The next in authority is the Beirat, which is composed of eighteen members appointed by the Ministry of Schools and Churches. This board is composed of certain officials of the district, directors and officers of higher trade schools, higher commercial schools, public schools, art schools, and representatives of various trades. Below this, each school has an advisory board.

Bavaria.

The industrial and commercial schools of Bavaria are organized in a great variety of ways. Some are joined to the public schools, others are organized independently. Let us quote from Sierck, ("Das deutsche Fortbildungsschulwesen, p. 70) Die Sonn und Feiertagsschule partizipiert an der Verwaltung der Volksschule, die gewerbliche und Kaufmännische Fortbildungsschule steht als Nebenanstalt unter dem Rektorat der Realschule und die selbständigen Anstalten dieser Art stehen unter einem Lokalschulvorstand, beide unter der mit weitgehenden Befugnissen ausgestatteten Kammer des Innern der Kreisregierung und in letzter Instanz unter dem Staatsministerium des Innern für Kirchen und Schulangelegenheiten."

The fact that one type of these schools is connected with the public schools, and another as an annex of a higher literary school, proves that there is neither dual control nor local control. Let it be remembered that there is no local control or local board for any of the public schools of Germany.

Each independent continuation school has a local school board consisting of a director of a higher trade school, a member of the municipality, and three employers of the trade. It is the business of this board "to keep watch on the regularity of attendance," and to manage the affairs of the school in accordance with the "weitgehenden Befugnissen Ausgestatteten Kammer des Innern der Kreisregierung und in letzter Instanz unter dem Staatsministerium des Innern für Kirchen und Schulangelegenheiten."

The schools above the continuation schools, are called trade schools, which are under the supervision of directors

2. The unification of the two types of schools will prove a blessing for all concerned.

3. Therefore, the way to remove the dual control has been pointed out and entered upon.

4. The administration of the elementary school controls the Sunday-and-Holiday Continuation School. The Industrial and Commercial Continuation School is controlled, as an auxiliary, by the authorities of the Realschulen. Independent Continuation Schools of this type are administered by a local school board. Both general types are subject to the broad powers of the Chamber of the Interior and in the case of the last mentioned schools, under the Ministry for Schools and Church Affairs.

appointed by state authorities. "To most trade schools is attached an association of employers, who bear the expense of school material, take part in the discussions on the plan of instruction, have the right of proposing technical teachers, assist in the supervision of the practical subjects, co-operate in the examination of apprentices, and help to spread interest in the school and to further its prosperous development." ("Kerschensteiner.")

Mistakes of the "Dual Control" Advocates.

The dual control advocates in this country, have failed to take cognizance of the fact that the industrial and commercial schools of Prussia were taken from the Ministry of Education and put under the Ministry of the Interior, because of the intense religious controversy which exists in Germany. Since that controversy is absent here the same justification for separation does not exist. The dual control advocates have made a still greater mistake, in substituting local control here in the United States, for state control which we find in Prussia.

One of the four types of vocational schools of Baden was taken from the Ministry of Education, and put under the Ministry of Interior, in order that it might be controlled by the same authority which controls the higher technical schools. There is no warrant for dual local control in this action.

The power of the local boards of the Southern German States has been greatly exaggerated. "Our friends" have substituted, "independent schools, supported by special taxes, carried on usually in special buildings, administered by special boards of practical men and women" for the boards of advisory power which we find in Württemberg and Bavaria.

"The Practical Boards."

One of the favorite arguments presented by those who favor a two-board system of control is based on the accusation that the average schoolman is somewhat conservative and is not fully alive to the present day needs of the community. This is supposed to be a valid argument for the inauguration of a second board independent of the school boards that we have now. Dr. Cooley says that he found this same attitude of disparagement obtained in Germany. He states that "the guilds and the practical men in Prussia" are dissatisfied with the conduct of the industrial schools, and for that reason the schools were taken from the Ministry of Schools and Churches and put under the Ministry of Commerce and Industry. He states further that "great care is taken to keep the schoolmaster from exercising an undue influence in the make-up of the commissions and boards which control the industrial schools." Now I am willing to admit that there is still a notion prevalent, in many quarters of the United States which attempts to deride the American school teacher, but I deny that any such opinion worthy of any consideration exists in Germany. Some of these people who are anxious to get dual-control for our schools have tried to extend and strengthen this feeling of disparagement of our American school teachers by claiming to have found that the same disparagement of the school exists in Germany. In other words, they try to make a generalization to the effect that the schoolman wherever you find him is not practical, but somewhat visionary, not to be taken seriously, and that this is true no matter whether the schoolman be from the United States, Germany, or elsewhere. Hence, the conclusion is clear, that in order to have these industrial schools under excellent management, it is necessary to divorce them as far as possible from the influences that are now controlling our public schools. I maintain that that is just an American idea that some of our good friends are trying to foist upon Germany to make the argument stronger in this country.

On the contrary, the German schoolman is the most influential person in his community. He is recognized everywhere as a thoro scholar. He has had, after leaving the public schools, six years' training in a state normal

school, and besides that he has had a year of practice teaching. His standard of scholarship is more than an equivalent of sophomore rank in our best American colleges. The German teacher, on the average, has had four or five years more training than the American teacher. The expenses of his education for the most part, have been paid by the State. Even before he was admitted to the seminar he had to be recommended by the teacher as being one of the best pupils in the school. He had to pass a physical examination, which is exceptionally severe. In other words even at the age of 14, he had to give evidence of being very exceptional both in physique and scholarship. This examination in itself, would go far to indicate that the German school teacher had been selected with reference to traits that would insure the securing of respect of the community where he might be engaged. In addition to this, the German school teacher serves two years in the army. During this period of two years' service, he receives extraordinary recognition from the army officers. Since practically everybody serves in the army in Germany, all men get into the habit of showing some extra deference to the school teacher, because all have had a chance to see during their two years of military service that the school teacher who served in their ranks did receive this recognition from the army officers.

Another reason why the school teacher is a man of great prominence in the community is because he has a life position. There is no local board to put him out of office. He receives a pension from the state after his days of service are over. His wife and children are pensioned by the state. The fact of his economic independence is then one of the reasons that makes him a respected man in every community. In addition to this, the school teacher in the country districts is usually the secretary and treasurer of the land-banks, and when people want to borrow money they go to the school teacher. Now from what you know of things in this country you realize that the man who has the power to loan money is not considered a second rate character in the community. Further, it frequently happens when some dispute arises in the community that the contending parties, instead of going to trial, argue their case before the schoolmaster; and altho he has no legal authority, yet his judgment in the matter is accepted. In the light of all these facts, it must be evident that the advocates of the dual school board in this country, have "missed their guess" entirely when the thought to substantiate a two-board school system because the German school teacher was not regarded as an individual of influence in his community.

Suppose for the sake of argument, we grant that the American schoolman is conservative, and not prepared to carry out the new industrial school program, and that the lives of our boys and girls are more or less wasted by being under a corps of teachers who are not fully efficient, it still does not prove that a two-board school system will remedy our difficulties.

If you will read the Prussian reports of the Prussian Minister of Trade and Commerce for the last 25 years, you will be surprised by the number of times that he refers to the fact that experience had taught that the efficiency of the industrial schools depended upon the work and discipline in the elementary schools. He calls attention to many changes that had to be made in the elementary school, before the time and money spent on the industrial schools really became effective.

Also Dr. Kerchensteiner, of Munich, mentions in his reports frequently that in the different stages of developing the industrial schools, it was found necessary to improve the elementary schools. Is it not clear that he would have been greatly handicapped if he had not had the elementary schools under his charge?

In the summer of 1909, I took a course in Berlin under Dr. Kuchne of the Landesgewerbeamt. In his lectures, he called attention to the fact many times that advancement and further efficiency in the industrial schools would depend largely upon the co-operation of the elementary schools. In fact, German opinion is pretty well divided on the question as to whether the elementary or the industrial schools have had the most to do with the present industrial efficiency of the Empire.

Now our friends in this country seem to think that if a separate school board composed of practical men can just get control of the boys and girls after they leave the public schools, then our vocational education problem would be largely solved. You see from the facts that I have cited, that German experience proves no such thing.

If our public schools are not what they ought to be then they must be improved, and efficiently managed just the same as are the industrial schools. That being true, then the second school board composed of so-called practical men could not give us efficient workmen, because their control over the life of the child does not extend over a sufficiently long period of time. German experience does teach that. In order to do its work well and effectually, this second school board needs to have the child under its control not from the age of 14, but from the age of 6. German experience does teach that. This, however, proves our contention, that we need one school board.

The advocates of the dual control plan have taken it for granted that the American employers and labor leaders are quite as competent to give counsel as are the German employers and labor union men. The Germans have gone thru these schools. They are in position to know what they are talking about. German labor unions have been unanimous in their support of industrial education for the last three decades.

The American labor unions have just got thru fighting the establishment of industrial schools. Now since the schools are coming in spite of their efforts rather than because of their assistance, some people are already prepared to turn the management over to them.

Have our employers of capital and laboring men shown exceptional high ability in managing interests common to both? I think not. Perhaps no country in the world shows a worse situation than does the United States with reference to strikes, boycotts and other labor disturbances. For the last several years, the troops have been stationed almost continually, in one or more field of industry in order to preserve even a reasonable peace. The problem of educating our boys and girls is a much larger and complicated question than is the settling of labor disputes. After our "practical men" show that they can manage an easier "problem" namely, the labor question, then we shall be ready to consider reasons why they deserve some special consideration in the control of our industrial schools.

The efficiency of our industrial schools depend quite as much on culture, morals and discipline as it does upon mechanical skill, and for these reasons all classes of society should be represented in the forces that influence and control them.

The Preparation of Meals by the Student

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THE effectiveness of any work in foods taught in the school is measured, to a large degree, by the efficiency which the students display in planning, preparing, and serving meals. Only too often is a test applied which purports to discover the degree of this efficiency and which is in reality a veritable farce. The teacher plans the menu, accepting suggestions from the students, it is true, but securing in the end a composite collection of dishes for the arrangement of which no one but herself can receive credit. The cost is then worked out more as a problem in arithmetic than to determine whether or not the meal is one appropriate for any given income. The teacher prepares the orders for the butcher and grocer, and she herself attends to the selection of meat and vegetables so that everything will be in readiness. She then assigns the various items: Mary, the soup; Jane, the meat; Louise, the potatoes; Carrie, the salad and so on, so that in the end, Mary has demonstrated her ability to make good soup, (perhaps she was selected because of that ability) and Carrie has had a little more experience in making appetizing salads. The serving is all done from the kitchen, the teacher superintending. After all is said and done, and the class has received congratulations for having served a delicious dinner, no one except the teacher can be said to have demonstrated her efficiency in planning, preparing and serving a meal, and her efficiency in this instance, is that of director and not of worker. The student may not even have increased her efficiency in preparing a single dish. If she has unlimited time, she may take as long, or even longer, in honor of the occasion to prepare a dish similar or identical to those she has prepared before.

It is not to be understood that the above plan is not often necessary and beneficial, but it is doubtful whether it does more than to furnish examples of well balanced meals, and to give opportunity for review, for work in larger quantities, and for instruction in serving. If the work is to be of direct benefit to the student, it must be of such a nature that it can be duplicated in the home. In the type of serving under discussion, no attempt is made to approximate home conditions, in the planning of the meal, in considering the labor involved in the preparation or in the serving. The dinner is, as a rule, too elaborate to admit of its being served in the average home, from the standpoint of economy, both of time and of money. Furthermore, the impression is unconsciously given that the position of hostess is essentially that of maid and that she must remain away from the table in order to give her entire attention to supplying the wants of her guests. The fact that the hostess must be at the table in order to fulfill her responsibility and privilege of making the occasion an enjoyable one, quite aside from any consideration of the food itself, is not touched upon, because the girls in the kitchen are not the hostesses. They are merely the caterers. Accepting this method, however, and utilizing it to secure from it all

of the benefits possible, but realizing its limitations, the teacher is confronted with the problem of determining in some other way, the efficiency of her students in the planning, the preparing and the serving of meals. The problem was stated and a solution attempted at the Northern Illinois State Normal School recently.

Each girl in a class of nineteen was given an opportunity to prepare and serve a dinner or a luncheon entirely without the assistance of the instructor. The meals were served at times most convenient to the individual girls, either during the school week or on Saturday. The assignment of days was made early so that other work could be arranged accordingly. Each girl was allowed from fifteen to eighteen cents per plate, exclusive of laundry and fuel, for the meal which she intended to serve. The girls were Seniors in the Normal School and were taking their third term of food work. The previous classwork had dealt mainly with the development of the principles of cookery and the application of those principles in the preparation of dishes. Combinations for meals had been discussed from time to time, and work in the class preparation of meals had been done, as much of the responsibility as possible being taken by the students. About three weeks had been devoted to the examination and utilization of numerous recipes to illustrate how variety may be secured by changing familiar, standard proportions, and to indicate attractive methods of serving. Immediately preceding, some work in dietetics was done to develop the idea of well balanced meals with a fuel value sufficient to meet the needs of varying individuals under varying conditions. The individual requirement for women leading student lives and taking, on the whole, only light exercise, was found to vary from 1,800 to 2,200 calories per day, so an average of 2,000 was accepted for the basis of calculation. From ten to fifteen per cent of the total calories was to be in the form of protein. The 2,000 calories were to be distributed among the three meals as the student chose. Usually about 1,000 calories were put into the dinner, 300 to 500 in the breakfast, and from 500 to 700 in the luncheon. The plan for an entire day was submitted to the instructor on sheets prepared for the purpose. (See page 119 for sample sheet).

The plan was first examined to determine whether or not there was a duplication of any but the most common foodstuffs, such as bread and Irish potatoes, even tho the forms were different. The individual meals were then considered and the following tests applied:

1. Is there a preponderance of protein, of fat, or of carbohydrate in any instance? For example, macaroni and cheese with meat; fried potatoes and pie; or potatoes, rice and cornstarch pudding, are indications of poorly balanced meals.

2. Is an unnecessary amount of money expended for form or color? Out-of-season fruits and vegetables are illustrations.

3. Is the same flavor duplicated in a meal? Potatoes au gratin and cheese balls served with the salad are examples.

4. Is an unnecessary amount of time involved in preparation? For example, if a time limit is set, such as the two-and-a-half-hour one in this case, the wisdom of making a dessert calling for the hollowing out of squares of sponge cake, the filling of the cavity with partially set gelatine and the covering of the whole with whipped cream, is questionable. The same gelatine and cream, accompanied by a piece of sponge cake, is usually preferable.

5. Are the meals, on the whole, a good return for the money expended?

Her general plan approved, the girl attended to her ordering and then made out detailed plans of procedure. She was allowed one assistant who might act as a younger sister in the home, cutting the cake, freezing the sherbet, setting the table or helping with the serving, but not with the actual cooking of food, so her plans for her own time were of necessity carefully made. Such things as salad dressing and cake which the housekeeper does not consider as belonging to any one meal, she must make and have cold in time to serve within the total allowance of the two-and-one-half hours. This time could be spent consecutively, or it could be distributed, as the girl in charge desired. If rolls were to be made, the situation was different than if the plan included baking-powder biscuits. Let us suppose that her menu consisted of:

Cream of celery soup.

Croutons.

Roast beef.

Buttered string beans.

Rolls.

Mashed potatoes.

Gravy.

Currant jelly.

Baked apples with whipped cream.

Coffee.

A plan such as the following, shows a number of weak points.

- | | |
|-----------------------------------|-------------------------|
| 1. Start rolls. Make croutons. | 6. Pare potatoes. Cook. |
| 2. Mold rolls. | 7. Make soup. |
| 3. Put roast in oven. | 8. Whip cream. |
| 4. Wash and core apples. Bake. | 9. Make coffee. |
| 5. Open can of beans. Bake rolls. | 10. Season beans. |
| | 11. Make gravy. |
| | 12. Mash potatoes. |

1. After preparing the apples she might, because of the similarity, go on to the paring of the potatoes, instead of stopping, presumably putting away the pan she was using, to open a can of beans.

2. The rolls would be baked before she was ready for them, fully twenty minutes before the potatoes were finished.

3. Unless she were counting upon using already cooked celery for the soup, she would probably be delayed in waiting for it to soften.

4. The croutons might be cut at the time suggested, but it would be a waste of gas to toast them then, when she might do it later when the oven was being used for other things.

A well worked out plan is a decided help if the girl is somewhat unused to the experience and finds herself becoming nervous. She can check her work up quietly and can see at a glance what remains to be done.

Because of a lack of any reception room, easy chairs were placed in a corner of the dining room and guests were greeted there. The hostess then returned to the kitchen and completed her preparations. The guests included the two instructors in the department and two other members of the faculty or other friends of the hostess. When the first course had been brought in, the hostess invited her guests to come to the table and indicated where she wished them to sit. At the end of the course, she excused herself and she and her assistant removed the dishes and served the next course. Carving was a new experience to many of the girls but a study of the muscles in the piece of meat and the location of the bones before hand, simplified it somewhat. Sometimes the assistant sat at the left of the hostess and helped with the serving. More often she was seated at the opposite end of the table, perhaps pouring the coffee which was usually served with the salad or dessert course. The original plan included an examination of the efficiency of the students in regard to dishwashing, but the guests so frequently and heartily offered their services that it was decided to allow the hostess to show her skill in organizing, (scrapping, sorting and piling) and to sanction assistance in the actual washing.

If in checking up her expenses, the girl found that she had used more or less of anything than she had planned for, she indicated the change, charging herself only for what was used, assuming that in the household any leftovers would be utilized. In this instance, any such leftovers were sold. For example, because of the difficulty of roasting much less than four pounds of meat, there was always some of it left when it was prepared in that way.

The experiment was felt to be, on the whole, very successful. It showed clearly what it was intended to show, namely, the efficiency of the various students in planning, preparing and serving a meal. It also brought out some interesting illustrations of co-operation. Each girl gave her successors the benefit of her experience and was always keenly interested to hear news of the latest dinner. After the critical discussion which followed each dinner, the girl almost invariably said, "I wish I could serve the same meal again. I could do it so much better." That would unquestionably be the ideal arrangement. Very careful notes would of necessity be kept, in order to gauge accurately the improvement. The wearing of a pedometer so that the saving of steps the second time could be determined, would be an excellent thing. A pedometer, adjustable to any stride, can be purchased for \$0.75. To use this with any degree of accuracy would necessitate determining the per cent of error in side steps. A kitchen cabinet, equipped as in the home, would improve the conditions for working. When preparing a small meal in a laboratory, many additional steps are taken because the number of duplicates in the equipment makes the compact arrangement of complete sets difficult. This can be overcome by fitting

out a desk with the necessary large utensils if the space can be spared. Collecting all such utensils upon a tray or upon a working table are other ways of saving energy. A movable table, properly placed, also saves many steps. In considering the adaptation of any such plan to the high school, one needs to consider first of all the previous preparation of the students. If the work in foods extends thru the entire four years as weekly work, or thru one year as daily work, the girls ought to be able to practically duplicate the procedure discussed here with perhaps a slight increase in the time allowed and a little more help on the planning of the work. The preceding work in dietetics would be simple, but with the general ideas carefully planned, well balanced, economical meals could be worked out. If the work is to be done as independently as this plan indicates, it would be wise to have it done by the Junior or Senior students rather than by those of the first two years, tho the latter is not an impossibility.

Viewed from the standpoint of the teacher, the plan offers opportunity for the presentation of material which it is difficult to introduce and illustrate in any other connection. The usual courtesies of the dining room are easily dealt with in this connection. From the student's point of view the experience is novel and interesting and she is undeniably glad to know how to serve an attractive meal at a reasonable cost of money and time. It has been found that the result is the acquaintance not with one dinner alone, but with many others as they are being worked out, for the plans of menus, cost, etc., are at the disposal of the students. From the standpoint of the home, this plan must surely meet with the approval of those in the home who so often criticize, and so justly, that the students are trained for "cooking" but not for "keeping home." Not the least of the reactions upon the homes should be the fact that the preparation of the meal assumes an aspect other than that of drudgery, one which presents itself as an interesting problem.

A sample menu is given below:

Dietary Sheet.

Date: Friday, 13, 1914.

Persons served, Six.
Proposed standards, 2164 calories per day.
For energy, 1928.64
For protein, 235.16.

Dishes	BREAKFAST		Calories
	Amounts	Total	From protein
Orange	1 medium sized	100	06
Toast	2 thin slices	100	13
Butter	1 ordinary pat.	100	
Egg	1 medium sized	75	10
Corn flakes	1 ordinary serving	100	11
Cream	$\frac{3}{4}$ small glass	150	10
Sugar	$3\frac{1}{2}$ level teaspoon.....	50	00
Coffee			
	Total	675	50
LUNCHEON.			
Macaroni and Cheese	Ordinary serving	100	10
Cabbage salad	$\frac{3}{4}$ cu. in.	50	12.5
Cooked dressing	large serving	50	10
Stewed apricots	1 tablespoon	50	5
Doughnut	1 serving	100	6
Milk	1 large	100	12
	1 small glass	100	37
	Total	550	92.5
DINNER.			
Rib roast	Fairly large serving.....	150	21
Brown Gravy			
Butter	Ordinary pat	100	00
Mashed potatoes	Ordinary serving	100	10
Peas	Very small	50	12.5
Jelly	Very small	50	00
Buns	2 buns	100	14
Apple and	$\frac{1}{2}$ apple	25	5
grape salad	$\frac{1}{2}$ oz.	40	2
Cooked dressing	1 tablespoon	50	5
Saratoga flakes	3 portions.....	25	2.5
Krummel Torte			
Dates	6 Dates.....	66	1.33
Nuts	6 nuts	100	10
Whipping cream	1 tablespoon	25	1.25
Sugar	2 teaspoons	33	
Cream	1 tablespoon	25	1.25
	Total	939	81.33

Dietary Sheet.

Persons served, Six. Date: Friday, 13, 1914.
Proposed standards, 939.
For energy, 857 $\frac{1}{2}$.
For protein, 81 $\frac{1}{2}$.

MEAL: DINNER.

Dishes	Amounts	Cost
Mashed potatoes	$\frac{1}{2}$ pk. potatoes at 15c per pk.	\$0.03
	$1\frac{1}{2}$ cups milk at 2c per cup	.03
	3 tablespoons butter at 36c per lb.	
Peas	6 tablespoons or $\frac{1}{4}$ can at 13c per can.	.0325
Rib roast	$\frac{3}{4}$ of 4-lb. roast at 18c per lb.	.27
Gravy	3 cups flour at .008c per cup	.024
Rolls	$\frac{1}{4}$ cup milk at 2c per cup	.0066
	3 tablespoons sugar, 2 tablespoons butter, $\frac{2}{3}$ yeast cake	.0133
Jelly	$\frac{1}{4}$ glass at 5c per glass	.025
Apple and grape salad	3 apples at 8c per doz.	.02
Saratoga flakes	$\frac{1}{2}$ lb. grapes at 10c per lb.	.05
Salad dressing	$\frac{1}{4}$ package at 15c per package	.0375
	$\frac{1}{4}$ cup vinegar at 8c per qt.	.0066
	1 egg at 30c per doz.	.025
	3 tablespoons sugar	
	1 tablespoon butter	
Krummel Torte	$\frac{1}{4}$ package dates at 10c per package	.03
	$\frac{3}{4}$ cup nuts at 70c per lb.	.15
	$1\frac{1}{4}$ eggs at 30c per doz.	.0375
	Whipping cream for Torte as well as Coffee	.15
Coffee	6 tablespoons	.03
Sugar	4 teaspoons	
Sugar total	10 teaspoons= $\frac{1}{4}$ cup at 7c per lb.	.0217
Butter total	12 tablespoons= $\frac{1}{4}$ cup at 35c per lb.	.09

Total Calories, 939; From Protein, 81 $\frac{1}{2}$. Total, \$1.0797

"Youth should be a season of instruction in industry and the useful arts, as well as in letters and the sciences mastered by their aid. Each child should be trained to skill and efficiency and productive labor."—*Horace Greeley*.

COSTUME DESIGN AND ILLUSTRATION

Ethel H. Traphagen

(Fourth Article)

Textures.



As to illustrating black material in pen and ink consideration must be given as to whether it is a shiny texture with many high lights or a dull black silk or velvet with little or no shimmer. The supporting points usually catch the light and it is here the whites are left or put in. The trimming has to be kept light to show the detail. See illustration Numbers 38 and 39.



Illustration 38.

Illustration 39.

Courtesy, N. Y. Globe.

Stripes and plaids are both done in a manner to give the best expression possible to the special design to be represented. Complicated designs often have to be greatly simplified for reduction, and care must be taken to give the general effect in the most telling way. See illustration Number 40. Shepherd plaid when carefully done is often made by drawing small cross stripes

in pencil and filling in alternate square spaces with black. See Illustration Numbers 41 and 42.

Dotted and flowered materials should not be expressed in a helter skelter manner but for satisfactory

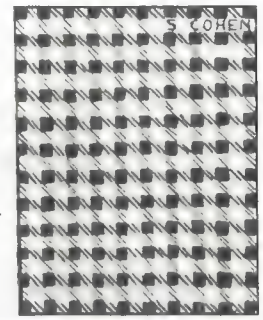
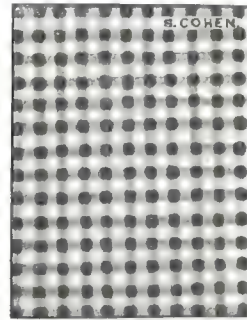


Illustration 41.

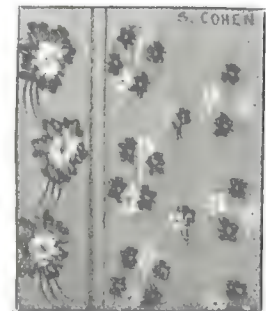


Illustration 41a.

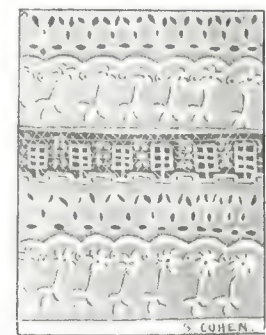


Illustration 41b.

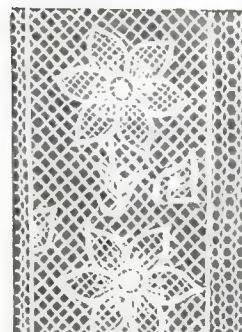


Illustration 64 and 64a.



Illustration 50. Courtesy, Ellsworth Co.

results should be thought out in an orderly way, using imaginary squares or diamonds for a foundation. See illustrations Number 41a and 40.

Chiffons must keep their transparent quality, usually expressed by a delicate line. Chinese white, when used discreetly, is often helpful for this purpose.

Laces and embroideries are carried out either in detail or in a sketchy way according to requirements. When the drawing is needed to display a particular lace you must give greater detail than when advertising the pattern of a dress in which any kind of lace can be used. See illustration Number 50. When white lace is to be done for reproduction in halftone, in other words, in wash drawing, a dark background is made and lace is worked out in Chinese white over this dark ground. The reverse is true of black lace. See illustration Numbers 64 and 64a.

Wash work embroidery is also done with Chinese



Illustration 40. Courtesy, Pamilla Cottons.

white but the background differs in tone according to the sheerness, while the solidity of the pattern is in-



Illustration 44. Permission Gimbel Bros.



Illustration 42. Permission, Stern Bros., N. Y.

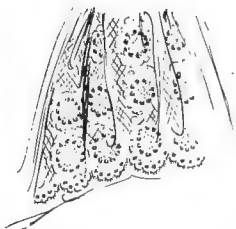


Illustration 43.

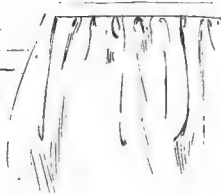


Illustration 43.

licated by heavier lines on the shadow side. See illustration Number 41b.

Side plaits, box plaits, tucks, gathers, etc., are all drawn the way they really look. See illustration Number 43.

Stitching is expressed by a straight line or a line of dots, tho there are several different ways of making them. See illustration Number 43.

Fur is done in masses of lustrous dark and light

with a soft, irregular edge, avoiding too liny an effect. The treatment, in fact, is much the same as for feathers and human hair. See illustration Numbers 7, 44 and 48.

To express textures well, you should cultivate a



Illustration 45. Courtesy, Home Pattern Co.



Illustration 47. Permission, Stern Bros.

love and appreciation for them. It is good to handle them, study them and observe them at home, in shops, in the street, at plays, in museums and in pictures, noticing the weight they have, the folds they make and the lines they take. Still life studies of them are helpful.



Illustration 46. Courtesy, Frederick Loeser Co.



Illustration 48. Courtesy, Stern Bros., N. Y.

THE ARTHUR HILL TRADES SCHOOL

Merton Hubbard Wheeler



THE Arthur Hill Trades School of Saginaw, Michigan, has within the two years of its existence proved its right to a first place among the schools of industrial learning in this country. It was opened for classes in October, 1913, after having been in course of construction for nearly two years.

Local people did not attach much importance to the Trades School project, but outside educators were watching the experiment with considerable interest and have been the first to give endorsement and unqualified praise.

It is the first school in Michigan to devote itself exclusively to the teaching of the Trades and is a radical exponent of individual instruction. Its aim is to develop the man; the citizen, first, and mechanic afterward. It does not prepare the students for engineering courses in the universities, but in teaching the trades, it prepares its student-citizens for life.

Like other trade schools in America it follows to some extent the example of its German prototype. The aim of the builders has been to see a Trade School of the highest type, adapt itself to the peculiar needs of the local trades and manufacturing community. In this respect it is already declaring itself.

The school was made possible by a bequest in the will of the late Honorable Arthur Hill, whose interest in education in Michigan was well known during his life time, and whose glorious works for the good of those who would learn, live after him. His establishment of a scholarship endowment fund, in the local high school which bears his name, has educated twenty of its graduates in the University of Michigan, and will send one student each year during all the coming generations, to that institution. His will provided \$200,000 for a complete Trades school building, and an endowment almost sufficient for its perpetual maintenance.

A commission was appointed by the Board of Education, into whose trust the new school was given, to inspect the Trades schools of America and Europe, with a view of incorporating all that was best in the line of construction and equipment. The result has been all that could be desired. A local architect designed a building that combines dignity, strength and beauty, and suggests by its massive construction, a workshop, and by the plain but beautiful decorations of its facade, a school.

This workshop-school is admirably adapted in its appointments for instruction and practice in the various trades. Its shops are equipped with the best machinery and appliances; its classrooms where academic studies in connection with the trades are taught, are fitted with scientifically constructed desk-tables; its many windows afford an abundance of light, and its ventilation system is the best that modern science can recommend.

It is an informal school, but withal a most perfectly organized institution. Its instructors study the

peculiar needs of each student and help him to help himself to knowledge. The boys and girls are all interested in their work. It is their school. Everyone tries to do the smallest thing perfectly. A boy working in the shops soon learns that a problem in arithmetic, or algebra, or geometry must be mastered before he can continue with his work on the patterns or the lathes. He has discovered his own need and is interested in the working out of this tangible problem to the extent that he makes a vital adventure with mathematics and wins. That is the way the academic subjects are taught; the training of the mind in conjunction with the training of the hand are a part in the work, and keen joy that is seldom experienced in high school work manifests itself.

The present course of study makes provision for instruction—practice in operating and marine engineering; a machinists' course; cabinetmaking; patternmaking and mechanical drafting; plumbing, and electrical courses for the boys, and dressmaking, sewing, millinery, and domestic arts for the girls. As soon as the needs of the school require, additional courses in forestry, printing and engraving, bookmaking and book-binding, cement work, bricklaying, and in fact every phase of the tradesman's art will be provided.

During the year the work in the shops has been augmented by visits to shops, factories, power plants, and other places of mechanical interest, and stereopticon lectures have been read on subjects pertaining to the trades. Shop work consists of machine, pattern, foundry and forge practice and familiarizes the student with the various processes of manufacture. Laboratory work consists of actual practice with boilers, engines and various accessories; direct and alternating currents; motors and generators with switchboard operation; steam fitting; wiring and testing; gas engines and steam turbines. Each student is also required to devote one half-day per month to actual power station duty in the school plant, tending fires, pumps and heaters; operating the engine, generator and switchboard; and is at the same time held responsible for the general neatness of the plant and for the daily log.

The Girls' Department.

The subjects offered in this department comprise: Arithmetic; English; industrial history; textiles; drafting; household arts; millinery and sewing.

Arithmetic—A thoro review with special application to Industrial problems.

English—spelling, composition and grammar, letter writing and business forms.

Industrial History—A study of the history of costume in connection with general history.

Textiles—primitive textile industries as connected with shelter and clothing—comparison with modern industries—study of materials and weaves—simple tests for differentiating cotton, silk, wool, linen, and adulteration—examining by touch, appearance, and use of the microscope—study of prices, widths, and names of ma-



An Evening Class in Plumbing.



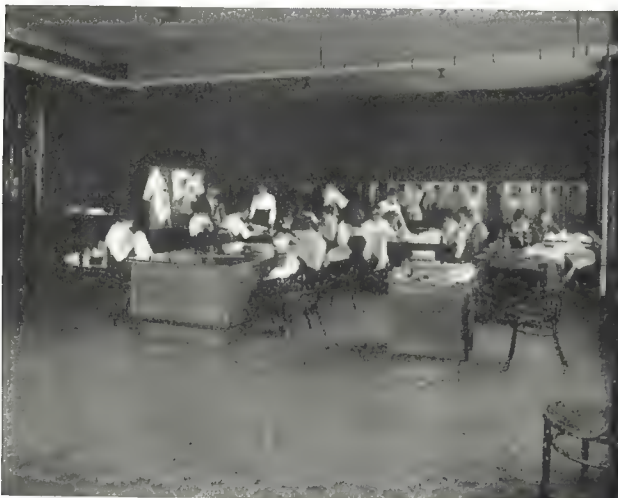
The Well Lighted Forge Shop.



The Mechanical Drawing Room.



A Day Class in Household Arithmetic.



An Evening Sewing Class.



The Machine Shop.

terials—early methods of weaving—use of heddles and other devices—development of looms—hand and modern power looms—preparation of yarns for weaving—finishing of materials—dyeing and printing—formation of

judgment of materials—making of clothing budgets in relation to income, etc., etc.

Drafting—shirtwaist draft, shirtwaist sleeve draft, skirt draft, tight fitting waist draft, tight fitting sleeve

draft, coat draft, crinoline modeling, draping in cheese-cloth on dress forms.

Household Arts—crocheting and knitting—embroidery and embroidery design—lace making—basketry and leather work, stenciling and costume design.

Millinery—making wire frames—stretching buckram—willow and cape net—use of velvet, silk, plush and straw—making flowers and trimmings.

Sewing—white work department—practice in making stitches and seams—making underwear—use of drafted and commercial patterns—hand and machine sewing—machine attachments—patching and darning—estimating and planning purchases of materials for garments.

Elementary Dressmaking—making of tailored shirt-waists—fancy blouses, linen coats—lingerie dresses, involving hand and machine sewing—the use of drafted

at a table of solid sheet steel that weighs more than twelve hundred pounds. They range in age from 18 to 53 years. Incidentally, the appointments of the building provide a room nearly three stories in height, where a house may be built by a class in carpentry, and fitted with complete plumbing equipment connections and fixtures, by the class in plumbing who will learn to figure costs, make estimates, etc.

The Evening classes in power station engineering, and mechanical drawing were also popular.

Many women, housemaids, stenographers, clerks, teachers, and not a few well known matrons availed themselves of the instruction in sewing, and dressmaking, at the Trades Evening school.

Tho not in connection with the Trade School proper, a class in beginning English for Foreigners was maintained at the Trade school building, and was attended



THE ARTHUR HILL SCHOOL OF TRADES, SAGINAW, MICH.

and commercial patterns and estimates of materials. Two other courses in advanced dressmaking are also offered.

Night School.

During the year, in addition to the regular day sessions, a most successful night school was conducted: a record attendance being maintained thruout the year. The personnel of the various classes was interesting. For instance, the class in machine shop practice was composed of boys who were apprenticed in shops or factories and desired to advance themselves. In addition the class was composed of two chauffeurs, two bookkeepers, a clerk, a carpenter, and a miner. They turned out some very fine specimens of machine work during the course. A class in plumbing illustrated in an accompanying cut shows a group of miners, laborers, and two prominent businessmen of the city. They are working

by half a hundred new-Americans, who were seeking to master the difficulties of the language of their adopted country.

The Summer School.

A successful six weeks' summer school marked the close of the first year's work at the Trades school. Half-day sessions from 7:30 to 11:30 A. M. were conducted and instruction given in machinshop practice and mechanical drawing, and dressmaking and millinery. The University of Michigan gave its official endorsement of the new Trades school by its announcement that two hours' credit would be allowed in the engineering department to those students who did satisfactory work at the Trades summer school and were planning to come to the University this fall.

At the Trades building, but not in connection with the Trades school the district maintained a class for

those students below the eighth grade who either wished to make up work or secure advance credit in some of their academic subjects. It proved a very successful innovation and many students having failed to make their grades on account of sickness will be able to continue work with their classes at a considerable saving of time to them. Others gained half a year's credit in some of their subjects by earnest application to work during the vacation season.

The Principal.

The principal of the new school, Mr. Gustave Eggert, is a Saginaw product. He graduated from the public schools and from the Engineering Department of the State University in 1901. Later he took special work in marine engineering. He devoted his time to general engineering work until 1908, since which time he has been employed in technical trade instruction. He is a master mechanic and a schoolman who understands his pupils.

Entrance Requirements.

Pupils who have completed elementary schools are admitted without examination, and pupils who have not graduated from the eighth grade are admitted under special conditions prescribed by the Board of Education. Those pupils who have definitely in mind which trade they wish to follow may begin their work at once and devote most of their time to it, and those who are undecided what lines they wish to follow, are permitted, in fact, required to take up several lines of work and then advised to follow the work they seem best fitted to prepare for.

It is probable that the new enrollments will include many graduates from eighth grades in various parts of Michigan, since by a ruling of the State Depart-

ment of Education, the school is recognized on a high school basis and pupils from any secondary school may attend at the tuitional expense of the district in which they reside.

Next year a new department will be inaugurated for the so-called hand-minded pupils of the schools whose work in the academic branches alone, is below normal. A special department where elementary work in Trade instruction will be given will furnish the boy of the fifth or sixth grade, who is more than 14 years old, an opportunity to develop an interest in a Trade, with a view of continuing as a regular Trades school student, provided he finds his work. This department will in no way lower the standard of the Trade school, but will rather broaden its scope, and it will also solve a problem that has confused many a grade teacher—the problem of the misplaced boy.

Saginaw.

The Arthur Hill Trades School is located in Saginaw, the third city in Michigan—a location ideally adapted to the aims and purposes of the school—in a manufacturing community, where the services of every kind of skilled laborer are required.

Saginaw's fame as a lumbering town has been superseded by the many industries that make it one of the busiest industrial centers in the Middle West. It is essentially a city of homes, and its wide avenues and beautiful lawns and parks, remembered always by travelers, have been the cause of many of the best industries adopting Saginaw as their location.

Ultimately the Trades school influence will develop a superior type of citizenship and will constantly raise the standard of the trades, as the nature of its work and a sense of its value and opportunity is understood.



TEACHERS' REST ROOM, SCHOOL 160, MANHATTAN, NEW YORK CITY.

Furniture designed and entirely made in the school shop by eighth grade boys. Mr. Joseph A. Levy, teacher of shop work.
Mr. Cornelius D. Fleming, principal.



Example No. 1. Braiding Shoestrings.



Example No. 3. Girl Weaving. Boy sewing three strand braid into round rag rug.

ORGANIZATION OF TEACHING MATERIAL

Examples for the Supervisor of Manual and Industrial Arts

F. D. Crawshaw, University of Wisconsin, Madison, Wis.



IN previous articles in this series, the writer has drawn largely upon his experience as a teacher in the selection of examples to illustrate the Organization of Teaching Material and Administrative Organization. With most of the examples he is familiar, thru personal classroom experience. The great majority of them have also been used by other teachers under regular public school conditions.

In the present and future articles, the writer will, to a great extent, use illustrations and examples taken from the experience of friends and co-workers. He has never filled a position as supervisor, except as chairman in two teacher-training departments in universities. In these he has organized and maintained, with associates, a variety of courses similar to those given in public schools. Men and women who desire to teach or supervise drawing, design and industrial work, have taken some or all of these courses. In them they have been given the best available suggestions, from whatsoever source, for teaching and supervision. Extensive use has been made of illustrative material, such as reports, teachers' and supervisors' outlines and conclusions of committees and commissions. The material has been collected

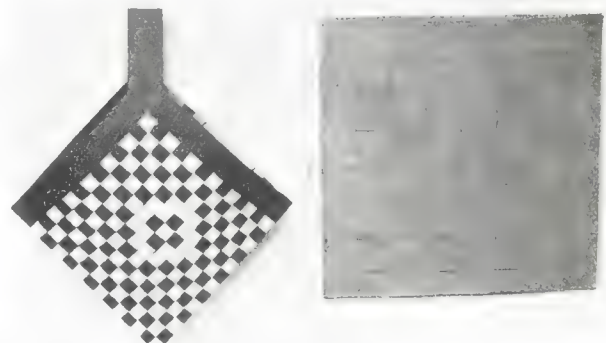
with care, and the best of it, sometimes modified, is offered in this series.

While the suggestions given are designated "Examples for the Supervisor," they should be equally serviceable for the teacher, as they deal specifically with material which the teacher uses. In case the teacher has a supervisor, the illustrations and examples given should, it is hoped, help both mutually to plan effectively a systematic performance of their service to pupils. In case a teacher has no supervisor, or is associated with one who does not give sufficient constructive helps, the articles will, it is believed, take the place of such.

Not infrequently, it is the observation of school visitors that teachers of drawing and shopwork have neither detailed nor general outlines to assist in preparing work. Only recently have books appeared upon manual arts subjects, which can be used as "texts" or as satisfactory outline helps. Even now, the textbook is an unknown quantity to many instructors. In not a few cases, it does not appear even as a "desk copy" for reference.



Example No. 2. Book Mark—One-half inch, two color papers.



Example No. 4. Harvest Basket with Practice Piece. Made of two color, three-quarter inch strips.



Example No. 5. Future Home-makers Winding Yarn from Skein to Ball.

Under these conditions, it would seem that supervision should furnish general outlines to teachers who, in turn, should prepare from them detailed plans. But the request for a "course of study" usually produces from the teacher a series of drawings or projects to be made in the drafting room or shop. These are seldom accompanied by any plan by which one group of work is shown in sequence with another. Even plans for individual pieces of work are rare, except as they exist in an intangible way in the mind of the instructor.

We may as well be honest with one another. We have failed to think out clearly and record accurately a plan by which we would, during a demonstration or individual instruction period, be prepared to adjust ourselves for the *next thing* and make it *educationally vital* in the experiences of our pupils.

Rather firm convictions upon some of these last points, gained as a result of considerable public school visitation work, warrants the following statement:



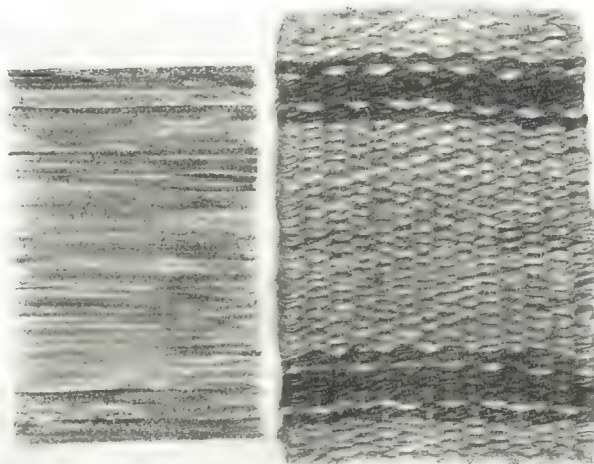
Example No. 6.



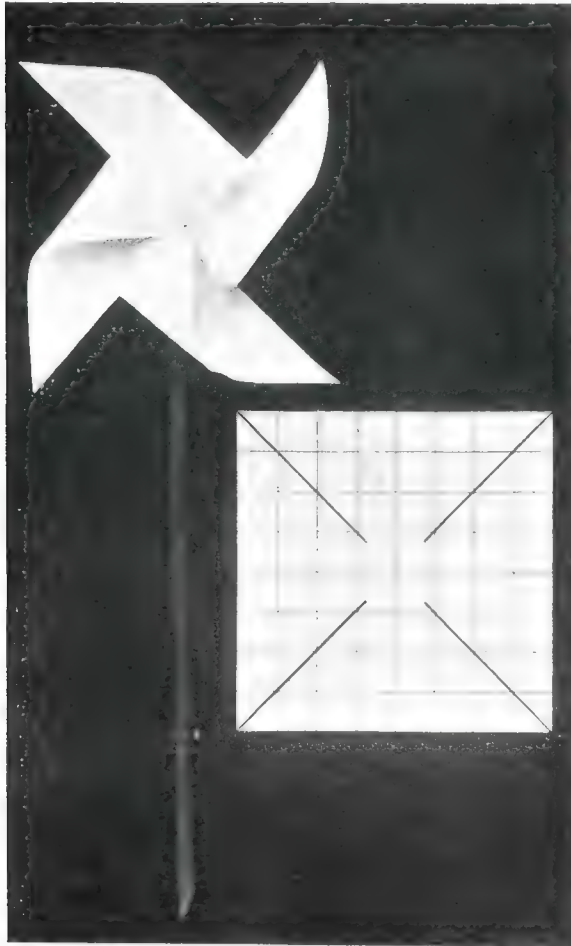
Example No. 7. Girl Weaving a Wristlet; Boy finishing Rag Play Rug or Mat.

In most cases, teachers of manual and industrial arts subjects have no guide for sequential and progressive pupil development, intellectual or otherwise, in class instruction. If they have any plan it is merely this: To have all members of a class make in some definite order certain projects (often mere exercises) which they have listed because these have been commonly made in the past, hence the predominance of the so-called "salt-box, coat-hanger and tie-rack" course of study. As was suggested (October, 1914, *MAGAZINE*, page 153) under "The Course of Study," the teacher's course should be more than a mere list of projects.

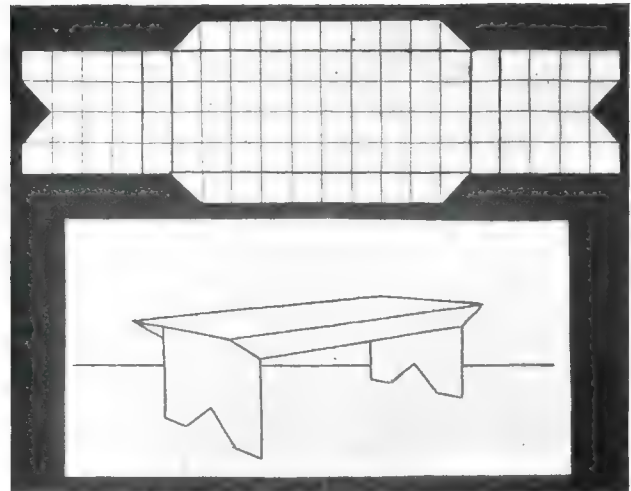
What then should it be? *From the standpoint of the supervisor it should be a program for progressive child experiences in objective thinking and satisfying doing. The program should make possible for all pupils, the development of a minimum of technique and skill in some particular line of manipulative and constructive activity. It should, also, have vocational as well as cultural or disciplinary value. Further, it should enable all teachers to make a check on these pupil accomplishments at the end of certain periods of time.*



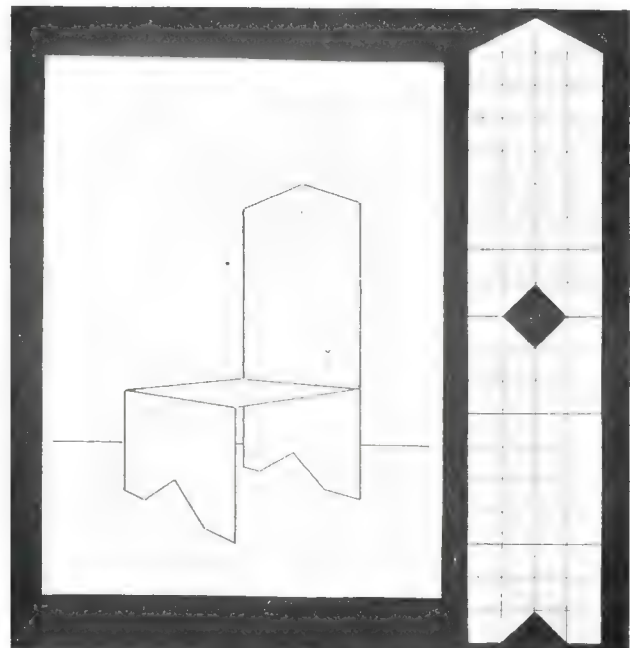
Example No. 8. (left) Crayon Rug Pattern and (right) Finished Rug, 5 by 7 inches.



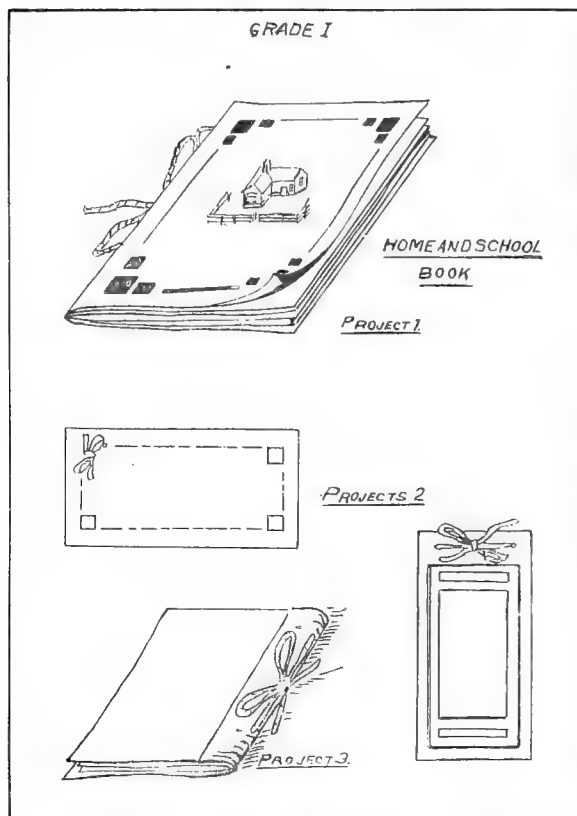
Example No. 9. Pin Wheel.



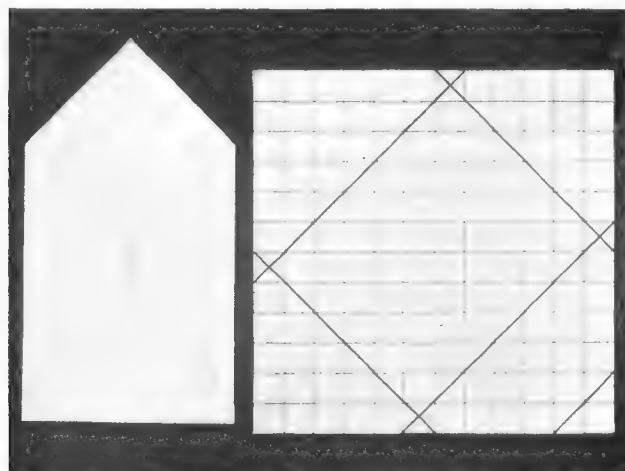
Example No. 11. Bench.



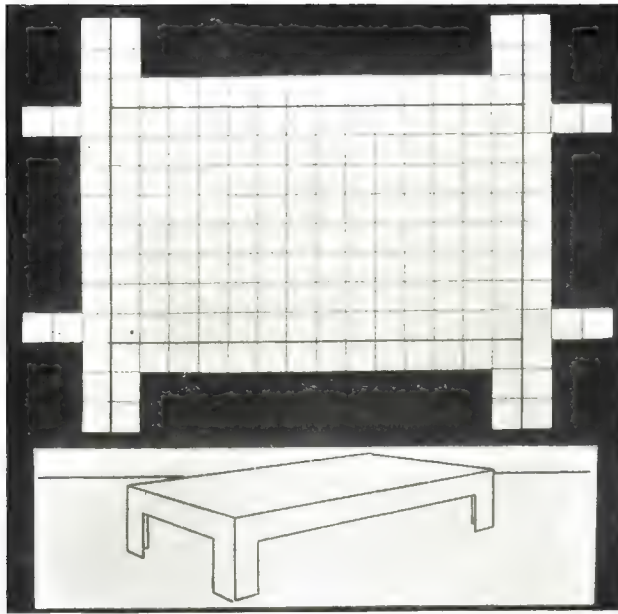
Example No. 12. Chair.



Example No. 10. Suggestions for Single-fold, Punched-and-tied Booklets.



Example No. 13. Envelope.

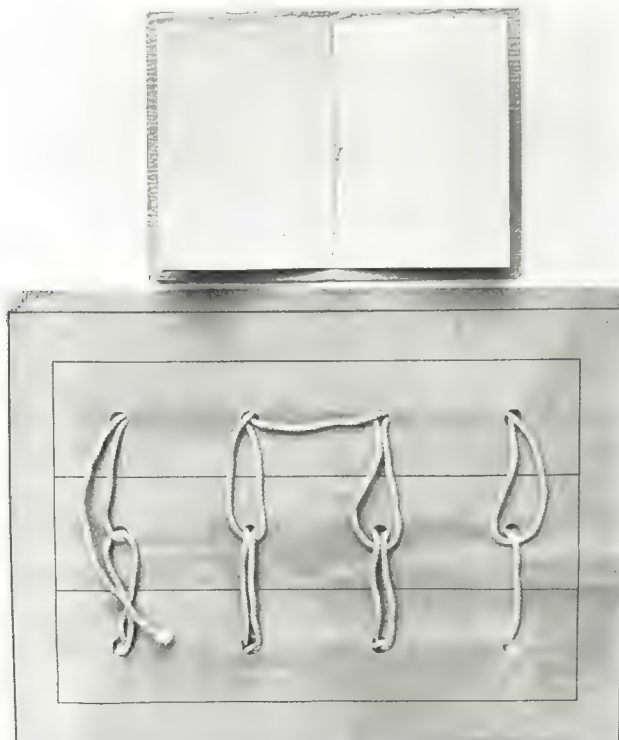


Example No. 14. Table.

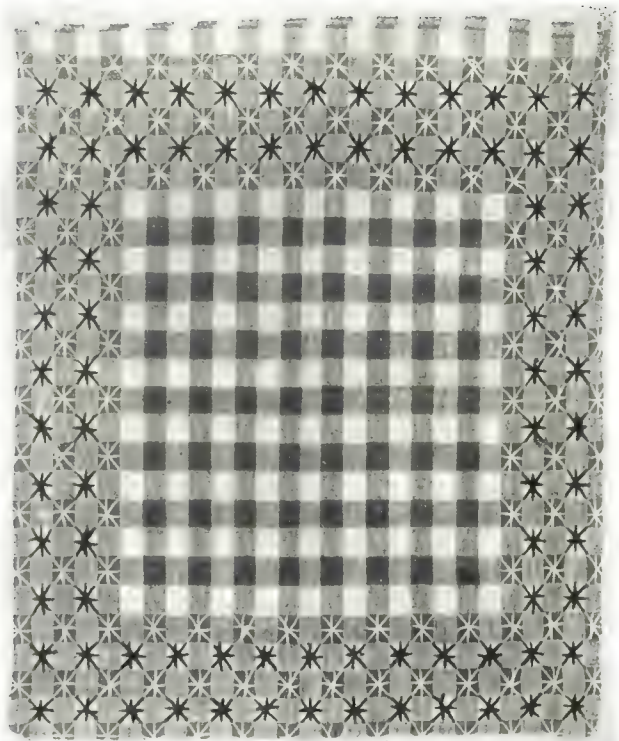
This all means that the supervisor's outline will be full of suggestion as to the following:

1. Time element.
2. Types of projects.
3. Materials.
4. Evidence of sequence in thought process and manipulative exercises.
5. Good methods of presenting and directing work.
6. Accomplishments, both qualitative and quantitative, possible of measurement at certain times.

This does not mean that a supervisor's outline



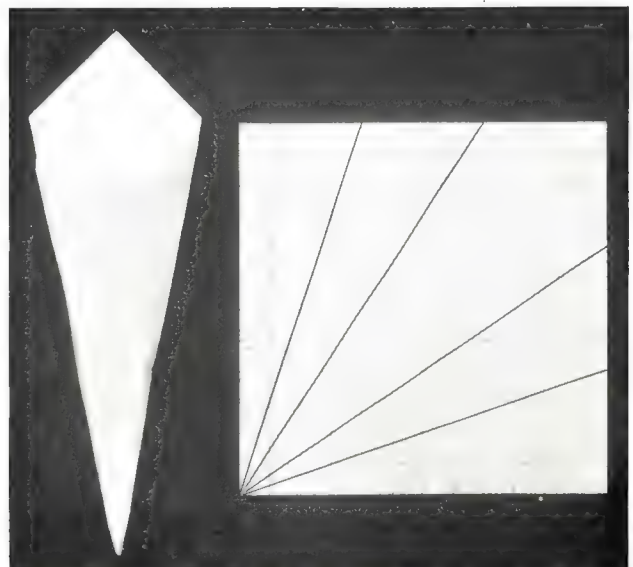
Example No. 15. Booklet and Chart to Illustrate Method of Sewing.



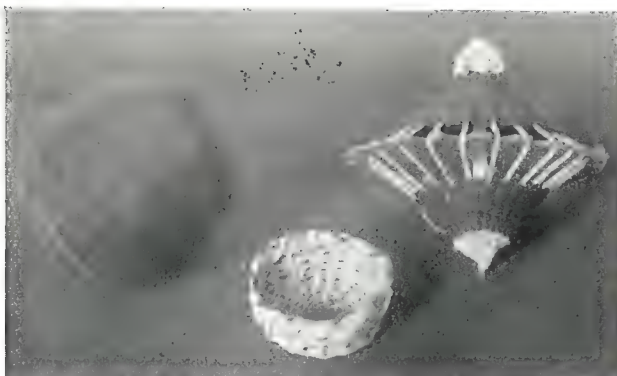
Example No. 16. School Bag with Cross-stitched Border. One-half Inch Blue and White Gingham.

should morselize or detail the teacher's work with a class. Such detailing, insofar as it is to be done at all, should be done by each teacher from the general outline of the supervisor. In thus organizing material more in detail, the instructor develops initiative in adjusting the supervisor's requirements to local conditions. These are not the same, even in the several schools in a community, saying nothing of the schools in different communities. Suggestions for making such reorganized outlines were given in the October number of this MAGAZINE.

Three different types of supervisors' outlines are given herewith. The first, a one-semester, first-grade



Example No. 17. Cornucopia.



Example No. 18. Yarn Ball, Raffia Basket and Loom used for Weaving.

construction work outline with illustrations of suggested projects is a plan of procedure by weeks and months. The week unit is defined quantitatively, while the month unit expresses qualitative results largely. It will be noticed that the outline is specific as a guide for *what work may be done* but does not define exactly *what must be done and how*. The teacher's and pupil's initiative is given free play. Large units and limits only are defined.

SUPERVISORS' OUTLINE FOR FIRST-GRADE CONSTRUCTION WORK.

Time: Thirty minutes a day in classwork. Additional time for individuals or class as conditions suggest.

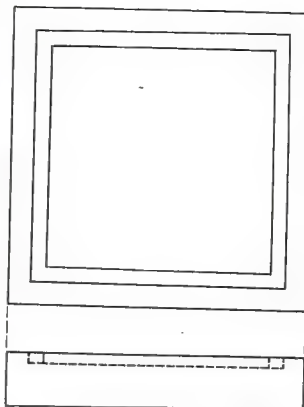
Clay.

September—Three Weeks.

First Week.

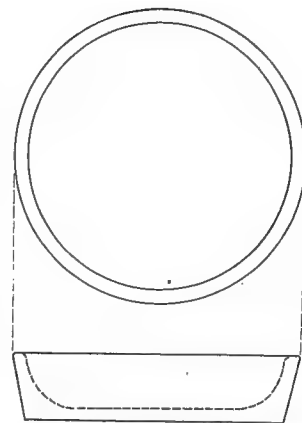
- a. Children handle clay *without* dictation.
- b. Lesson on modeling pumpkin or other spherical form.
- c. Lesson on modeling potato or other cylindrical form from nature.

TEA TILE



Example No. 19. Tea Tile, Border Incision One-quarter Inch Wide and One-eighth Inch Deep.

DESK TRAY



Example No. 20. Clay Desk Tray, Modeled Three-quarters Inch Deep and One-quarter Inch Thick.

Second Week.

- a. Children gather twigs and grasses for *harvest scene* in sand tray.
- b. Model in clay (without dictation) *cylindrical* and *similar forms* for sand tray projects. Bodies of people and animals may be included. Limbs to be made of tooth picks or small twigs.

Third Week.

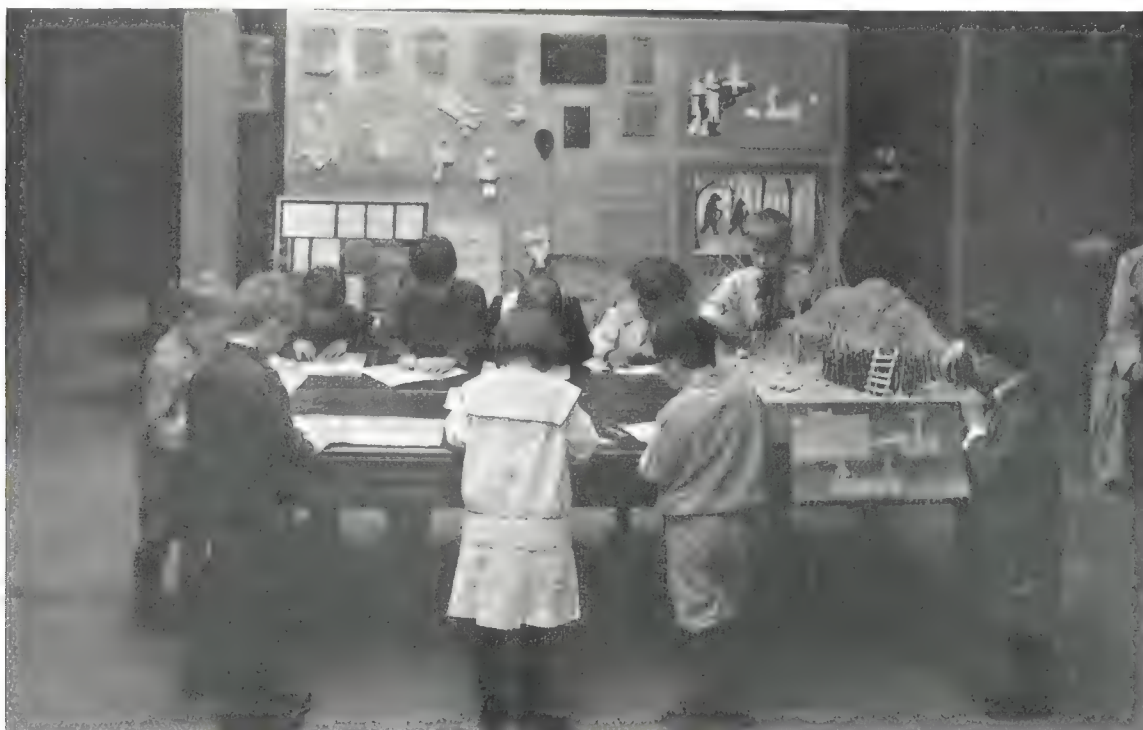
- a. Children draw and color with *crayon* a pumpkin.
- b. Model a high relief *spherical* or *cylindrical* vegetable on a square block of clay. Use *Chip Method* of instruction.
- c. Model "Bunnie" or "Pussy" in *repose*. Have animal in room or have realistic picture to show. Make this self-expression work but prepare for it by a *dictation lesson* in *drawing* and *modeling* some similar animal.

Textiles.

October—Four Weeks.

First Week.

- a. Braid *three* shoestrings (Example No. 1).



Example No. 22. Pupils at Work on Mounted Drawing Charts. Group Projects on Right of Table; Individual Projects on Bulletin Board.

b. Weave single "over-and-under" blue and white one-half inch papers into a book-mark (Example No. 2).

Second Week.

a. Sew clean, selected rags end-to-end into three-foot strips.

b. Braid these strips into a "three-strand" for rug (Example No. 3).

c. Weave with colored papers a *harvest basket* (Example No. 4).

Third Week.

a. Continue rug work. Give careful instructions concerning *home practice* including winding from skein onto ball, etc. (Example No. 5).

b. Complete harvest basket if possible to use at *Hallowe'en party*.

c. Draw pumpkin on yellowish-brown paper. Cut out and fasten on stick for *fan* (Example No. 6).

Note: Emphasize "Columbus" and "Thanksgiving" days.

Fourth Week.

a. Sew rug strands edge to edge into "old rag rug" (Example No. 7).

b. Draw with *crayon* a rug pattern, showing simple combination of colors. Approach problem by getting suggestions from children as to colors and width of color strips after showing good examples of rugs (Example No. 8).

Paper.

November—Four Weeks.

First Week.

a. Cut and fold from one-inch square paper a *pin-wheel* (Example No. 9).

b. In connection with "Garfield" day, make tents from four-inch and six-inch square colored papers. *Assemble in tray for camp scene.*

c. Begin work for *single-fold laced pamphlet* (Example No. 10).

Second Week.

a. Continue and complete pamphlet. Lace and tie with cord or yarn.

b. Make *bench*. Emphasize use of bench by Puritans (Example No. 11).

c. Make *chair*. Compare types of seats (Example No. 12).

Third Week.

a. Make *square envelope* (Example No. 13).

b. Make *Thanksgiving table*. Study simple table designs from catalog cuts (Example No. 14).

c. Begin work on *one-section sewed pamphlet* (Example No. 15).

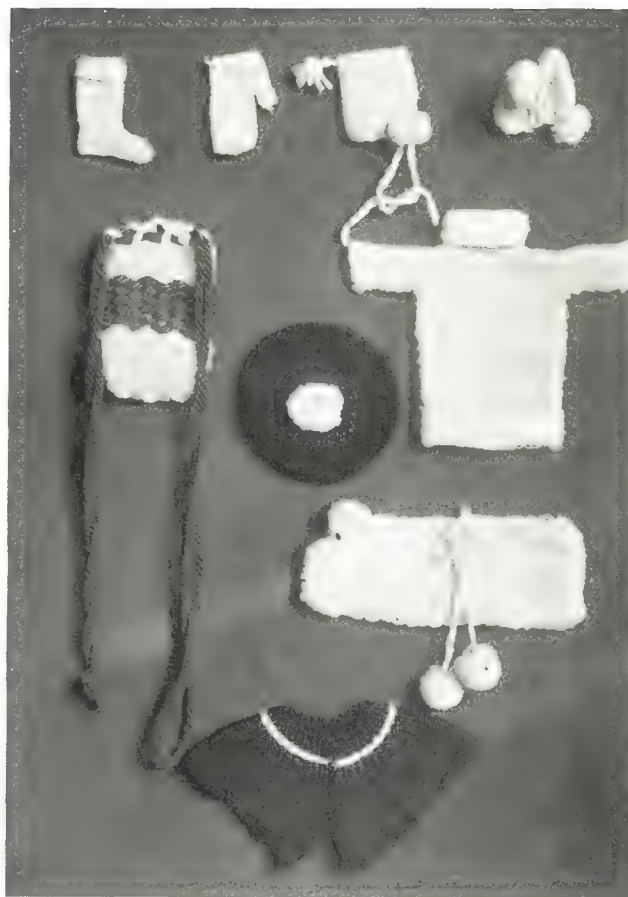
Fourth Week.

a. Complete pamphlet and *print* on front: *Words I Know*. Dictate printing carefully. Consider best position for words.

Combined Media.

December—Three Weeks.

Use all of time possible in this month to *finish problems* undertaken and to plan and complete *Christmas gifts*.



Example No. 21. Suggestions for First Grade Textile Work.

Note: Connect work with language and geography work and center all about the Christ Story.

Suggested Projects.

a. Blue and white gingham doily or school bag with simple cross-stitch border (Example No. 16).

b. Cornucopia (Example No. 17).

c. Colored yarn ball or small woven baskets made on special loom (Example No. 18).

d. Clay tile (Example No. 19).

e. Clay tray (Example No. 20).

f. Dolls' simple garments (Example No. 21).

g. Make use of sand tray for community work (Example No. 22).

Combined Media.

January—Three Weeks.

Review work of previous months, Christmas and preparation for *greater facility* in work of second semester. Make both *individual* and *group* projects.

Enlarge upon free-expression work but keep *framework* for semester in mind. Make all projects individually creative in thought and allow initiative in selection of projects as much as possible.

A man must train himself for his opportunity; for a great occasion is worth to a man exactly what his antecedents have enabled him to make of it.—*Matthews.*

INDUSTRIAL-ARTS MAGAZINE

Board of Editors

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EDITORIAL

FAULTFINDING AND THE TEACHER.

BEFORE many weeks, the annual struggle will be on. Superintendents and Supervisors will be seeking new teachers and teachers will be hunting new positions.

There is one attitude on the part of many teachers, especially young teachers, which, if changed, would radically reduce the friction, dissatisfaction, and consequent failure and loss of position. We speak of the severely critical attitude assumed by the new teacher toward the system—the established order of things in which he finds himself on beginning work in a new position. It is not an uncommon thing for such a teacher to improve every opportunity to find fault with the equipment, to criticize the methods, the supervisor, and the results, and to set himself to the task of revolutionizing things and making them over as they “*should be*.”

For such persons, it seems wise to make the following statements:

Perhaps the first duty of the new teacher is to assume that his predecessor, his supervisor, and the system he finds in use may each have points of decided merit, even tho they may differ sharply from him and his theories.

The new teacher should regard himself as a *part* of the system, should swing heartily into the work, and should bend his every energy toward making a success of the system under the existing conditions. This will show him to be a conscientious, fair-minded teacher, and will win genuine respect and consideration for him and for his opinions.

With such an attitude, there will come a time early in his work in any system, when both superintendent and supervisor will begin to rely upon his judgment and to seek his opinions and advice on various matters which arise in the course of the work. It frequently happens that before the end, or even the middle of the first year, a teacher with such an attitude materially modifies the system of which he has become a vital part. Such results are not accomplished by adverse comment on the conditions which he found on his arrival, but by commanding respect thru the superiority and intelligence shown in his own work.

A casual glance at almost any list of prominent supervisors reveals the fact that many of them were at one time just such thoroly fair, broadminded, tactful teachers in the systems over which they now have control. They may not always have been in entire agreement with all the details of the systems, but theirs was the spirit of help instead of the spirit of antagonism. They labored

with unselfish and untiring devotion for the success of the work in which they were engaged.

The educational “upstart” fully developed, is a grievous disturbance. Young teachers can avoid a good many of the pedagogical pitfalls by the strict adherence to this simple motto: “Be discreetly noncommittal on others’ faults; be modestly silent on your own virtues; keep thinking, and ‘saw wood,’ and remember—you cannot saw wood with a hammer.”

THE VOCATIONAL GUIDE.

A correspondent writes, “What do you regard the essential characteristics of the Vocational Guide?”

The characteristics as we see them, are as follows:

1. Absolute and genuine respect for boys and girls in every condition of life.
2. Absolute and genuine respect for every phase of necessary and legitimate human labor.
3. Intimate and first-hand acquaintance with one or more important industries, and a sympathetic knowledge of the difficulties and significance of the struggle for bread and butter.
4. Sufficient knowledge and education to render him capable of analyzing specific data gathered from a given field and of drawing correct conclusions from such facts.
5. *He must be a good teacher.*

CHILD LABOR LAWS AND THE CONTINUATION SCHOOL.

ANY serious consideration of the future possibilities of the continuation school for 14 to 16 year old children, viewed in the light of impending legislation, will lead one to believe that in a very few years we will have in a majority of the states laws forbidding the employment of children under 16 years of age. There will then be no need of the continuation school as we now have it. It may then be advisable to have the same type of schools for persons between the ages of 16 and 18.

We doubt if the immediate enactment of laws forbidding the employment of all children before the age of 16 is advisable. There are large numbers of children who might just as well be employed in the better grade of industries, as in the schools. There are also many children who would have a harder time if they were not allowed to work, inasmuch as they are compelled by poverty to earn at least a part of their living. Mothers’ pension laws are not of much benefit to these children as it is the practice in many courts to withhold the pension from the parents who have children over 14 years of age.

Industrial surveys are demonstrating that in some industries, provision is made for the training of young persons and this practice should be encouraged. These surveys are further demonstrating that many industries are not fit places for any young persons, and this type of industry should be compelled to either clean up and mend its ways or to employ only adults who are able to judge of conditions for themselves.

Some official should be provided by law with discretionary powers and should decide which industries are fit places for young persons. It would appear that the

State Department of Labor should make the necessary investigations and make such decisions. It should then devolve on the Department of Labor to issue lists of industries which may employ children 14 to 16 years of age and to also specify in what capacity and under what conditions the children shall be employed. The superintendent of schools, the attendance officer or other person issuing work-certificates would then issue certificates to children to work only in those industries which meet the requirements of the Department of Labor.

EDUCATIONAL MEETINGS.

IF conference between teachers can right educational wrongs and keep them right, the American schools should be the best of the world. No country of the world has so much organized conference among teachers as ours.

Now comes the slack season for school meetings and we have time to consider the nature of these numerous gatherings.

In a recent article in *School and Home Education*, Professor Hollister laments the tendency to "ransack the country to find prominent speakers to enthuse and inspire" and suggests that "the inspirationists be given a rest."

Indeed this tendency has developed a type of professional inspirationist. We might name several such from the programs at hand. Some of these inspirationists are not teachers. Some of them never have been teachers. They are inspirationists.

Industrial Arts stands for one vital principle, the inspiration of practical doing.

We believe that the valuable time of teachers in conference should be devoted to the problems of the teacher.

The most important problems of the teacher are the problems of conducting successfully the work of the school pupils in the schoolroom.

The Eastern Manual Arts Association has placed a restriction upon the effusions of the inspirationist by insisting that every speaker before the meetings of that organization illustrate the ideas presented.

This restriction might, we believe, be adopted to advantage by other organizations of teachers tho the further stipulation that the illustrations be of work actually done by school pupils under school conditions, would be more effective.

With such a condition imposed we would predict a long rest for the professional inspirationist.

TWO WAYS.

THERE is a constant debate between those teachers who insist on having their classes follow a fixed list of blueprint "models" and those who insist on a flexible scheme which takes advantage of the individual thought, initiative, and needs.

Undoubtedly the latter method demands a much more capable and resourceful teacher. But those who cling to a fixed list of "models" argue that the other method is necessarily accompanied by poor workmanship and bad habits of procedure. It is extremely difficult to understand why this must be so. In dealing with a

problem in woodwork, the actual construction in wood is based upon the working drawing in both methods. In the first method of fixed "models" the teacher furnishes the drawing or blue print and the pupil follows it. In the second method, the pupil has a part in planning the details of the problem, for which he makes his own working drawing. In both methods, the processes of the woodwork are carried forward in identically the same way. So far as bad workmanship is concerned, there is no more excuse for it in the one case than there is in the other. The fact is that with the added interest resulting from the appeal to the boy's own ingenuity and needs, a better grade of work may reasonably be expected than under the inflexible "model" system. In any case, a method succeeds or fails according to the quality of the teacher who is conducting the work.

SURVEYS.

THE statistics and information rendered accessible by industrial and educational surveys are without doubt invaluable in the planning and inaugurating of schemes for industrial education. At the same time we feel that it would be a mistake to have school authorities get the impression that such surveys are absolutely essential to the successful introduction of industrial education. The plan with a survey is to carefully ascertain just what is needed and desired by the workmen in certain industries and then to offer such courses in part time or evening classes. The information accumulated by the survey makes it possible for the school authorities to proceed with some degree of certainty as to the needs and desires of the community.

There is another method which allows the school authorities to proceed to provide what is desired. For example; the school authorities wishing to make the schools of more service to the community decide to offer night school courses. They list a large number of short courses in various lines which appear to them to be desirable. They distribute these lists, together with an announcement that should ten or twelve persons desire a course in any other line, that such a class will be provided. Two or three evenings are designated for registration, and at this time those desiring to enter the classes report. Then only such classes as are desired are provided.

There is so much which needs to be done in the schools which is entirely obvious, and so many improvements to be made, that it appears unnecessary for a school board to spend a large sum of money seeking to find conditions which require changing. If any school board has a superintendent of schools who does not know of conditions which demand attention in the schools, that board should secure the services of a new superintendent. Oftentimes the superintendent knows what is needed but in order for him to convince the school board, it is necessary to call in some outsiders to demonstrate to the school board that the superintendent knows his business. The trouble is that after that school board becomes educated and ready to change conditions, its term of office will expire and there will be another board to be educated.

HOW IT WAS DONE!

The purpose of this Department is to present monthly a wide variety of shop projects which have been actually worked out in elementary, high, trade and continuation schools. Contributions are solicited and will be paid for—THE EDITORS.

A SANITARY SCHOOL BARN.

R. S. Gerganoff, Director of Manual Training, Green Bay, Wis.

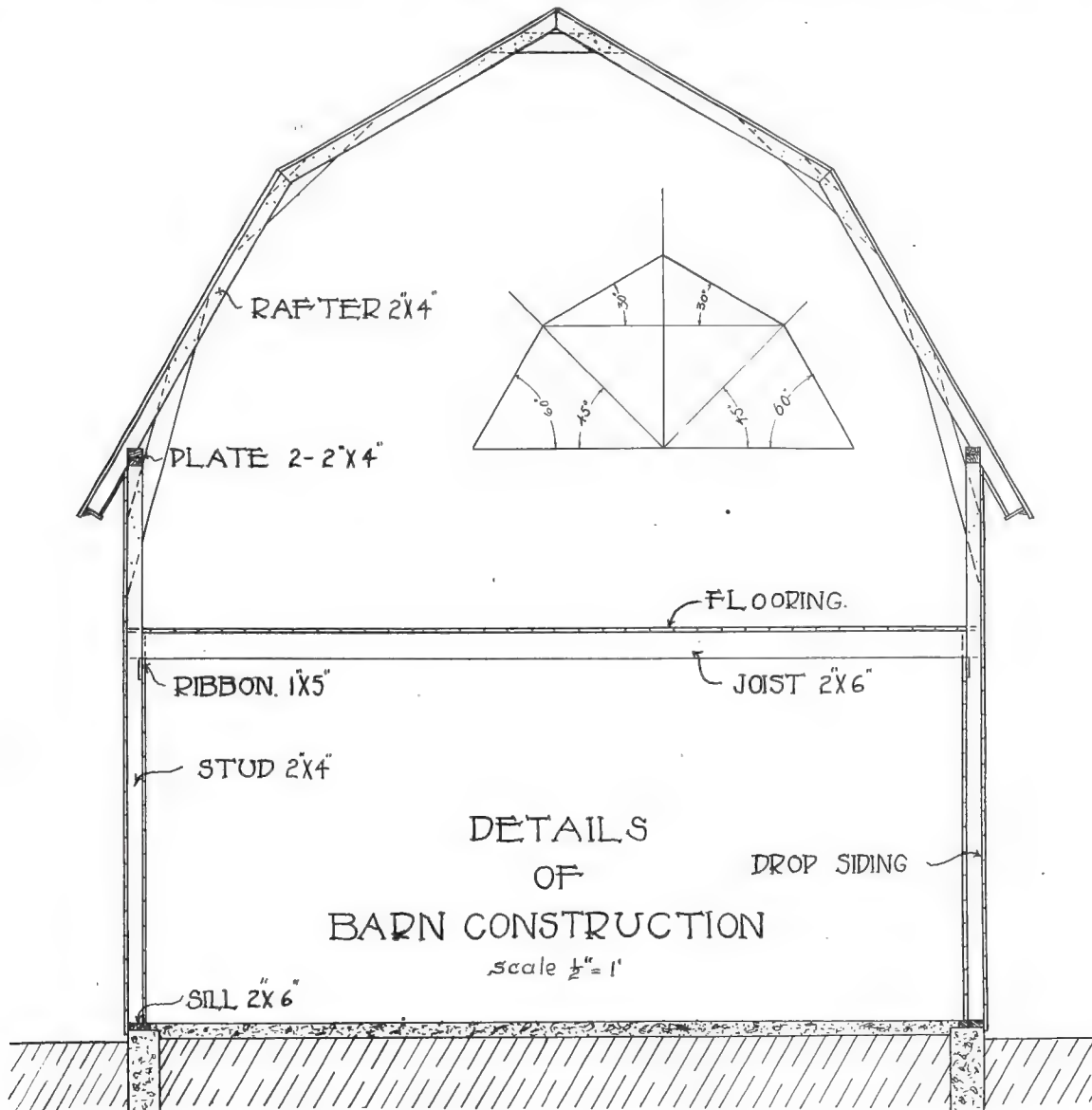
THE building of a sanitary barn for the Agricultural Department of the Green Bay West High School, proved to be an interesting problem, not only to the manual training and agricultural classes, but to the whole school and community. The manual training boys welcomed a change from the furniture work for a little while, the "aggies" were anxious to have a "home" for their cow and horse and the Board of Education desired to prove that the schools really could do practical work if they were given a chance.

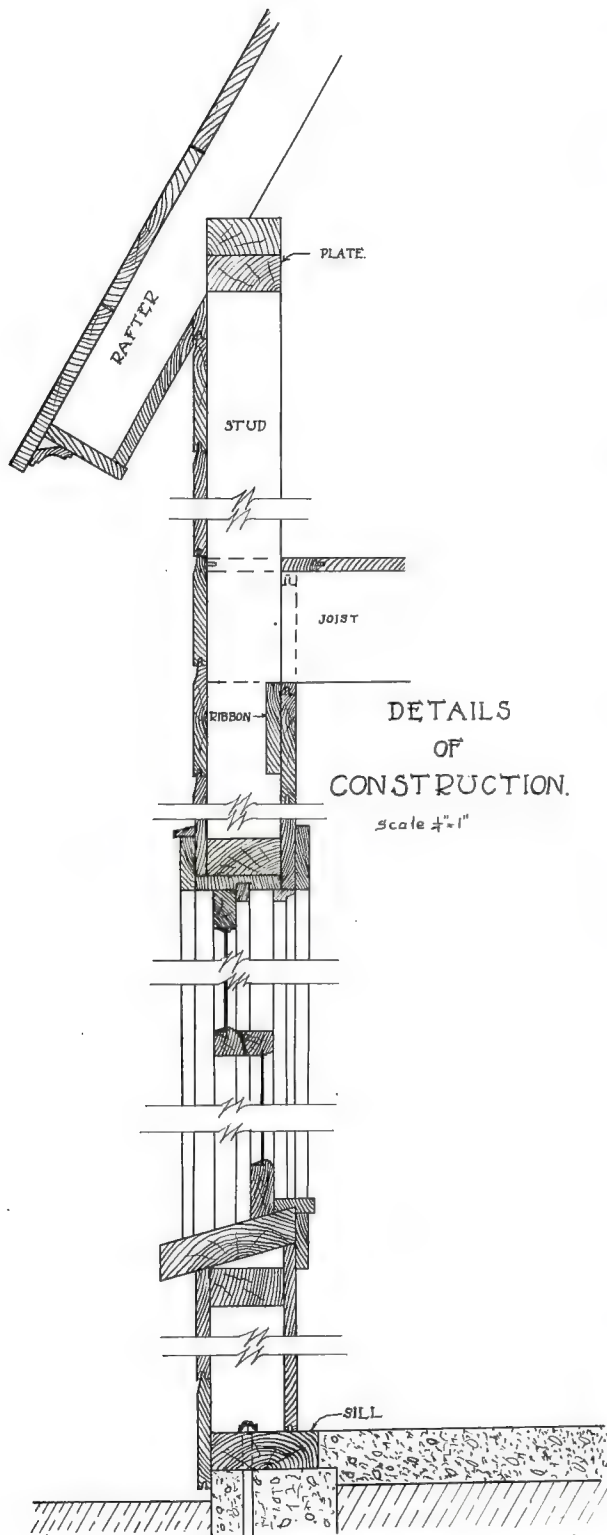
The work was carried on by the second, third and fourth year boys taking the regular four years' course in manual training and drawing, two 45 minute periods every day. There was no pay, since the boys used their regular periods and the appropriation was only \$200, for material.

To begin with, the boys visited some barns and houses that were under construction and made a few notes and sketches. Then they drew all the plans and construction

details for our barn. The architectural drawing was not new to them, but they never had had a chance to apply it to practical problems and follow their own plans. This work was practical not only as manual training, but it involved the practical application of drawing and geometry. The drawing of the geometrical figures and roof construction on paper with the instruments, and the making of the same figures on the ground or floor with a chalk line and yard stick, seemed to some of the boys as two different problems. They knew the propositions proving that 3, 4 and 5 units make a right angled triangle and that the diagonals of a rectangle are equal, but they did not think of using them in measuring and verifying with a string on a rectangle as large as eighteen by thirty feet. The drawing of the roof construction full size on the floor was another problem that involved practical geometry and drawing.

While the work was going on, the boys were asked to figure out individually different steps in the construction, as: How to make the concrete forms so that the lumber could be used again; the best way to frame and raise the





Details of Barn Construction

sides of the barn; framing the windows and doors; how to cut, frame and put up the rafters, etc. The cost of material, measuring for shingles, siding, flooring, etc., were also taken up together with the barn work.

The school farm of five acres is near the school so there was no time lost in going to the work. The first class took the tools out and the last brought them in and took care of the remaining lumber. All boys were required to have working clothes on and report on time. They were also told to keep in mind the rule used in some shops: "get to work and keep going or get out," as unnec-



Making Forms for Concrete Foundation.



The Framework Going Up.



Building the Roof.

essary talking, laughing and joking resulted in waste of time and inaccuracy. We had to adopt some strict rules to avoid disorder in classes of fifteen or twenty. Some saws were hit on nails, a number of chisels and hammer handles were broken, but that, as a rule, goes with every apprentice. The boys were not coaxed to do the work any more than they would be by a contractor. It was our aim, on the outside work, as it is in the shops, to give them an idea what would be expected of them out of school. This method might prove a failure in some other community, but with the encouragement of our principal it was quite effective in our school.



THE BARN RECEIVING ITS FIRST COAT OF PAINT.

The work was finished in five weeks and turned over to the Agricultural Department. The live stock has been in the barn for some time. The "aggies" are proud of their new barn and so are the manual training boys that made it.

Such problems add to the general interest and activities in the school. The boys feel that they are doing real manual training work. The parents also tell us that there is more enthusiasm in the students about school work when the different departments are growing and offer such practical courses. The joint exercises, broom holders, coat hangers, etc., are getting to be an old story now.

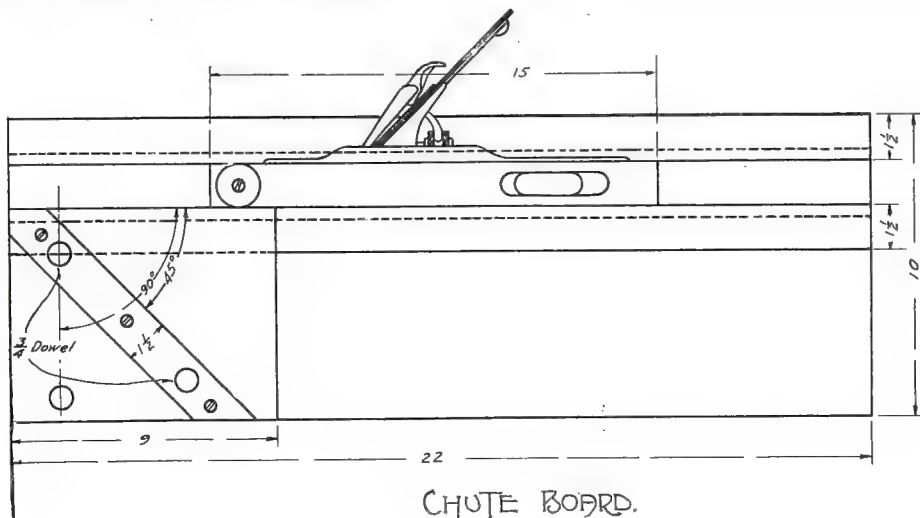
A HOME MADE CHUTE BOARD.

D. K. Hiett, Cincinnati.

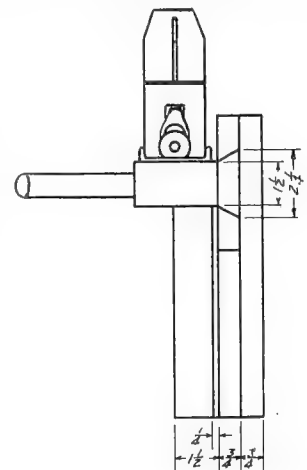
THE chute board shown in the photograph and drawing was designed and made principally as an aid in the

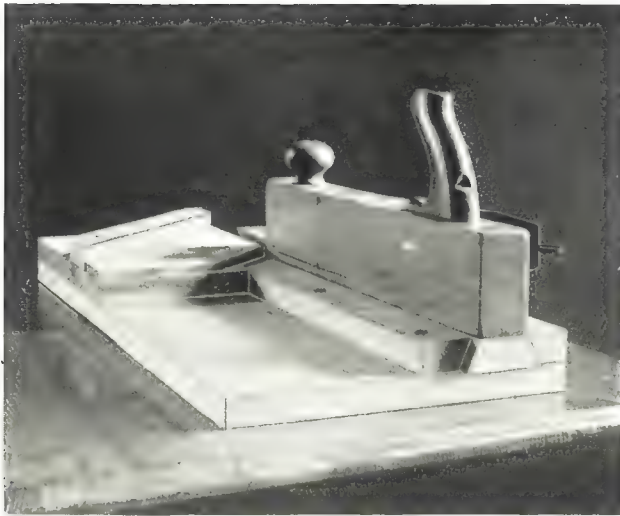
making of picture frames. While the drawing indicates its use only for planing squares and miter, it is readily seen that the $\frac{3}{4}$ inch dowel might be placed in different positions and fences constructed to give many angles. In fact, in the making of wooden lamp shade frames, we have clamped the fence temporarily in many positions to give various angles. Wedge shaped pieces may also be tacked temporarily in front of the fence to change the angle as may be desired; and used in this way a square fence may be fastened permanently in place.

A fifteen inch wooden bench plane has the knot and handle changed to the positions shown and the V slide, which must be made very carefully and perfectly of a hard wood, is screwed to the opposite side. The base board is then planed up true and one of the V guides screwed along an edge. The plane slide is then placed snugly



CHUTE BOARD.





Chute Board.

against this guide and the other guide is clamped in position so that the plane will more easily slide but will not wobble in the least. The second guide is then securely screwed in place. A board of the dimensions given is then fastened to the base to swing the working surface up to the corner of the plane bit.

In locating the fence an accurate square or bevel should be placed against the plane face and the fence loosely clamped in position. By lightly tapping with a hammer the fence may then be brought to the correct position and the dowel holes bored.

TOY REPAIR WORK IN OKLAHOMA CITY.

H. F. Rusch, Director of Manual Training.

The plan of the toy repair work done at Oklahoma City during December, 1914, was as follows:

A letter, setting forth the object and aim of the scheme, was sent to the principal of every building in the system. In this letter specific instructions were given how the toys were to be gathered and when they must be at the ward building. A wagon was then sent to gather up the broken toys that the pupils had collected. Three wagon loads were the result. Many individual contributions were made later both by young and old folk. Many



Dolls Repaired and Dressed by Students of the Oklahoma City High School.

a basket full of toys was left at the repair shop—the high school—by citizens not directly interested in school affairs but vitally interested in the less fortunate children of the city.

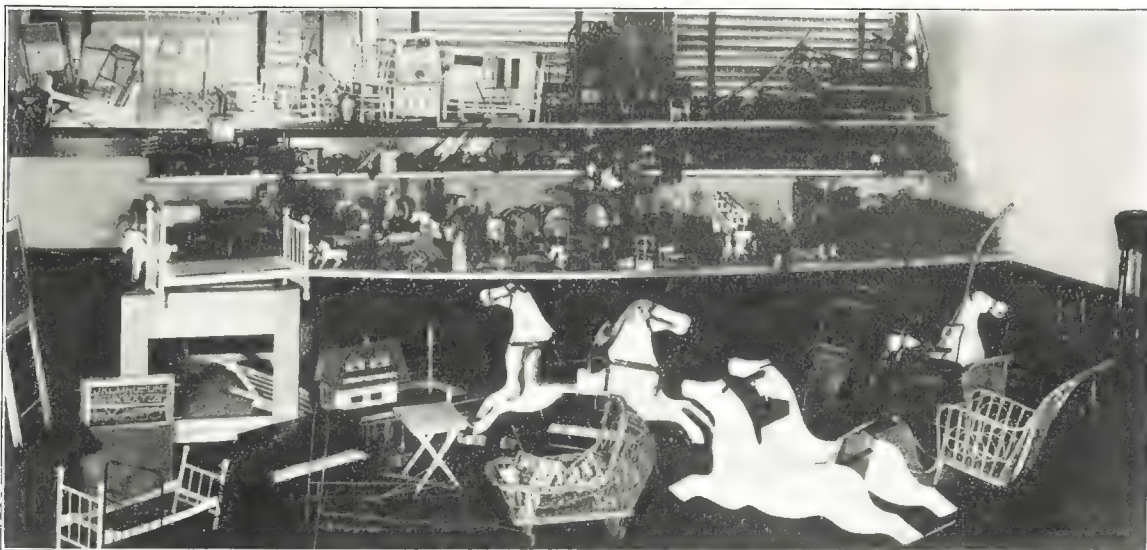
These toys were placed first in a small room in the high school, then fumigated and assorted. The wooden toys were sent to the wood shops, the metal toys to the iron shops. After the repairing and inspection had been done, they were sent to the paint shop and treated to a coat of paint such as is generally used for this kind of work. Nearly all the toys were striped. The toys now looked absolutely new.

The dolls were repaired by the manual training department, dressed by the household arts department, and marred faces and eyes were touched up by the art department. Dolls without eyes were given plaster of paris eyes.

The Federated Patron's Clubs of the city undertook the distribution of the toys. The different committees had the names of all the boys and girls in their respective districts, who would likely be without toys for Christmas. The women gave the toys to the mother of the child a few days before Christmas.

This repair work was all done by the students in the manual arts department of the high school. The response was beyond all expectation. The newspapers encouraged the work on every hand.

The department has sent letters to all merchants in the city, who deal in Christmas novelties, asking them that after their invoice is taken to send all discarded and broken toys to the department to be repaired for next Christmas. The response has been excellent.



Toys Repaired by Students of the Oklahoma City High School.

BOOK REVIEWS

Art Metal Work.

By Arthur F. Payne, Assistant Professor of Manual Arts, Bradley Polytechnic Institute. 186 pages. Price, \$1.50. The Manual Arts Press, Peoria, Illinois.

Part I of this book is devoted to: The influence of the arts and crafts movement upon Manual Training; the correlation of metal-work and design; the history and production of copper; the alloys of copper; coloring and finishing of art metal work with formulae and recipes; sources of materials and equipment.

In Part II are described problems of the art metal worker under the subjects: Etching and Soft Soldering; Straight Bending; Lapping; Saw-piercing; Annealing, Riveting, Seaming, Construction, Raising, Planishing, Beating Down, Fluting, Modeling, Chasing, Hard Soldering, Repousse and Enameling.

The text is clearly stated and illustrated by numerous reproductions of work of excellent design and execution. Professor Payne has combined in this instructive manual the results of professional craftsmanship and teaching experience which makes the book valuable to teachers and pupils of metal craft.

A Handbook of Vocational Education.

By Joseph S. Taylor. 225 pages. \$1.00. The Macmillan Company, New York.

This book attempts to present in a single volume, a systematic survey of the field of vocational education, giving both the historical and the logical aspects of the subject. It is a digest of some of the most important of the literature which has been accumulated, and is illustrated with numerous photographs of shopwork in the New York City schools.

The following extracts give the author's viewpoint of the subject: "The vocationalizing of the common schools is the exploitation of a noble institution for greed and gain."

"We do not need a new curriculum for existing schools, altho the curriculum needs revision from time to time to keep the school abreast of scientific discovery and responsive to economic and social changes. What we do need is a new system of schools to supplement the work of the present system and to serve as a connecting link between education and industry. There is no sense in berating our schools for not teaching vocations. They were never expected to do so. Separate schools are needed for special education; and as fast as possible are being organized. If European experience counts for anything, vocational subjects will be taken up by the pupil after the completion of his thirteenth or fourteenth year."

"There is no valid reason why a child who dislikes books should be compelled to defer his vocational training until he is fourteen. Nor is there any good reason why the public school should refuse to provide vocational training for those of its pupils who desire it and at the same time keep open the way to the high school for those who are headed that way."

The appendix gives a bibliography of the subject, the New York laws relative to vocational education together with apprentice laws of Wisconsin and a copy of a German apprenticeship contract. It describes several vocational schools and gives a copy of a monthly report of a school visitor in New York. To one at all familiar with the current literature on Vocational Education, this volume will be of little use, and to others it will not give a comprehensive knowledge of the significance of the movement for Vocational Education.

Jute and Linen Weaving.

By Thomas Woodhouse and Thomas Milne. 590 pages. \$3. net. The Macmillan Company, New York.

This is a technical treatise on the processes of weaving

as practiced in the industry, intended principally for those associated with the jute and linen trades. The processes and machines are very fully illustrated with photographs and drawings of the machines and parts.

The book should prove quite valuable to those learning the weaving processes. The authors are both in technical schools of England in which weaving is taught.

The Industrial Training of the Girl.

By William A. McKeever. 82 pages. \$0.50 net. The Macmillan Company, New York.

The text of this volume is constituted of part one of the larger one entitled "Training the Girl" by the same author. It plans for the careful training of the girl, thru practical activities, from early childhood thru elementary and high school and college. It is the dominant note of this little volume that industry—when properly related to the growth and the training of the young—is cultural and ennobling.

Every parent of girls would do well to consider carefully the suggestions made by Professor McKeever in this book.

Art: Denver Public Schools.

By Charles M. Carter, Art Director. Part I, Text, 54 pages. Part II, Illustrations, 90 pages.

The Denver outline for art in the elementary schools was issued in 1909; its excellence is well known. A volume of illustrations made by children in their regular work, and representing the average excellence required, has now been issued as a further guide to teachers. The author is careful to urge that teachers use the booklet only as a reminder of the type of work to be done and as an inspiration to excellence. The standard set is high—a standard of which any city may be proud.

Course in Agriculture.

For the Public Schools of Oregon, prepared by F. L. Griffin of the Oregon Agricultural College. Issued by the State Department of Education, Salem, Ore.

This circular is intended to satisfy the demands of teachers and school patrons for a year's course in the elements of agriculture, which will be broad enough to include the various agricultural activities of the entire state. The course is complete and unusually suggestive. Problems are assigned for each week of the year and are planned to fit the particular season, rather than endeavoring to proceed sequentially.

Mechanical Drawing Outlines for High Schools. By George M. Brace. Bulletin No. 55, issued by the State Board of Education, St. Paul, Minn., C. G. Schulz, Superintendent. A bulletin for teachers of mechanical drawing issued in order that instructors and examiners may have some basis for an understanding as to what constitutes satisfactory work in mechanical drawing.

How to Use Left-Overs. Issued by the New York Municipal Committee on Food Supply. Contains some 150 recipes for preparing left-overs in appetizing, nourishing dishes.

Night Schools, Gary, Ind. A handsomely printed pamphlet of more than two hundred pages, containing outlines of the industrial and general courses offered in the Gary, Ind., night schools. The booklet which was prepared under the direction of Mr. G. W. Swartz, is completely illustrated with plates showing each of the different types of work offered in the schools.

Minnesota Farmers' Library, Extension Bulletin, No. 3. Published at the University Farm, St. Paul, Minn. Gives the announcements and conditions of the Industrial Contests for Minnesota boys and girls, 1914-15. Includes details of projects to be constructed together with drawings of the manual-training projects.

ITEMS OF CURRENT INTEREST

THE SCHOOL CRAFTS CLUB OF NEW YORK.

THE School Crafts Club of New York entered upon its twelfth year by holding an open meeting at the Ethical Culture School in New York City. About 400 attended the meeting, notice of which was printed in the New York papers.

The speakers of the evening were Messrs. Henry Fritz, Francis Mahoney, Solomon Whitcomb and Lawrence Young. These men had just returned from a four months' study of the German vocational and continuation schools where they had been sent by the Board of Education of their city. The subjects of discussion were the German Vocational and Continuation Schools and what they are doing for Germany both industrially and socially. Many slides showing the German boys and girls at work in their classrooms and shops were shown by the speakers.

After the reading of the papers the meeting was thrown open to general discussion, many outsiders asking questions as to the adaptability of this kind of work to the schools in this country. The meeting was very interesting. At the close of the discussion refreshments were served to all who cared to stay.

The Club holds its stated meetings on the second Saturdays of November, January, March and May. On the second Saturdays of December, February and April, round table meetings are held at which shop subjects are discussed in detail.

On Dec. 12th the Club held a round table meeting at the Broadway Central Hotel. The subjects of discussion were "How Manual Training can be made an Aid in the Development of Taste in Industrial Art," by Hugo B. Froelich and Ezra Putnoi. "How can Manual Training be made More Practical without losing its Cultural Value?" by W. A. Carter and E. G. Hainert.

At the first table, Mr. Froelich, who has succeeded Mr. Eli Pickwick as Director of Manual Training in Newark, N. J. (Mr. Pickwick having been made Principal of the Newark Central High School), lead the discussion. His remarks were to the effect that in our Manual Training work we can lead the pupil to appreciate good design and proportion, to choose between the good and bad and to distinguish the beautiful from the ornate.

Mr. Froelich exhibited some cement forms, plant boxes, tiles, etc., which had been inlaid with colored cement or glass with a view to developing an appreciation of design and color among his pupils. Mr. Ezra Putnoi of New York City, led the general discussion.

At the second table, Mr. W. E. Carter of New York City, described an experiment which he is trying out at public school No. 90, Queens, under the supervision of Mr. Albert W. Garritt, Assistant Director of Shopwork of New York City.

In the 7A classes of public school No. 90, the boys framed two miniature houses, 36x28x20 inches, putting in door and window frames. The general principles of House Construction were discussed by the class. In one 7B class the boys had made cement molds for plant boxes, flower pot stands and a dog house. The other 7B classes had been organized on a factory basis, the boys being divided into groups each under a foreman. The boys in these classes constructed taborets, one group making the legs, another the braces, and the third group the tops. Where possible, jigs were used to facilitate the work. In the 8H classes some simple patternmaking had been taken up, the boys making their castings in lead.

Mr. Hainert of Jersey City, N. J., described some work in house building that his boys had done and told of his work in building miniature engines and mechanical toys.

Our meeting on January 16th was unique in its way.

Mr. E. G. Lena, the principal of the Girls' Prevocational School at Hoboken, N. J., had invited the Club to hold its meeting and inspect his school on the sixteenth.

Upon hearing this the Industrial Board of Education of Hoboken, promptly invited the Club members to a dinner to be prepared by the girls of the school.

The dinner was a revelation! While plain, it was well prepared and well served and revealed what great good work can be done in training girls for home service.

Among the guests were Hon. Martin Cooke, the Mayor of Hoboken, Mr. W. L. E. Keuffel, of Keuffel & Esser, Manufacturers of Drawing Supplies, who is President of the Industrial Board of Education of Hoboken, the Superintendent of Schools, the President of the City Council and many others prominent in the business and educational world of Hoboken.

At the dinner an address of welcome was made by Mr. Keuffel who described the progress of Industrial Education in Hoboken, from its meager beginnings 32 years ago, until the opening of Hoboken's modern schools for boys and girls.

After the address by Mr. Keuffel, the Club members inspected the school which was holding an extra session so that the members of the Club could see the classes and shops in session.

After the inspection, Mr. Lena, the principal of the school, described what the school was trying to accomplish in the way of preparing girls for the "home occupations," as he called them, i. e., sewing, cooking and nursing. Mr. H. A. Albright of Easton, Pa., spoke of the work they were doing in that town.

Mr. Albright was followed by Mr. Alvin Dodd, Ass't. Secy., National Society for the Promotion of Industrial Education, and Mr. Lewis Carris, Commissioner of Industrial Education of New Jersey. These men spoke of the possibilities of prevocational education and lauded the Board of Education, the Tax Commission and the Principal of the school for the excellent showing made by the girls and for the spirit of mutual helpfulness shown.

William H. Carter.

PRACTICAL FARM MECHANICS EXERCISES FOR HIGH SCHOOLS.

THE DEPARTMENT OF AGRICULTURE will shortly issue Farmers' Bulletin 638, entitled "Laboratory Exercises in Farm Mechanics for Agricultural High Schools." The purpose of the author, Daniel Scoates, Professor of Agricultural Engineering, Mississippi Agricultural and Mechanical College, is to supply high school teachers with practical suggestions for teaching boys who are to be farmers the best and most economical methods for doing some of the more common mechanical work of the farm.

The bulletin, which is well illustrated, gives, in its 26 pages, 42 practical exercises. The first five exercises have to do with the use of rope on the farm and show the best way of tying knots and making hitches and splices used in hitching animals and in tying up farm produce. The next four exercises deal with hitching up horses, fitting collars and repairing harness. Four exercises on the handling of gas engines and repair of belting, deal with the use of power. Later exercises have to do with the practical study and repair of different kinds of field and farm machinery run by engine or horsepower.

There is also a series of exercises having to do with farm buildings, dealing with such things as concrete posts, feeding floors, hog houses, drop nests, gates, fencing, painting and whitewashing.

The bulletin closes with a series of exercises on farm surveying, terracing, irrigation and drainage, and road dragging. The materials used in the exercises are such as are to be found on farms near the schoolhouses, or such as can be readily constructed, from the working drawings and diagrams, by the teacher and pupils. The bulletin may be had free on application to the Division of Publication, Department of Agriculture, Washington, D. C.

SHORT UNIT COURSES IN ERIE, PA.

SHORT UNIT COURSES have been offered in the night schools of Erie, Pa., for the first time during the present winter. Unusual interest has been aroused thru them and a large increase in the enrollment of the schools has been noticed. The schools have a total enrollment of 477 women in household economics and 242 men in industrial courses. The English classes which are conducted in connection with the same schools, have an enrollment of 645 students.

The aim of the unit industrial courses is not to make mechanics or to cause students to change their vocations. They rather help men and women in their present work, giving an insight into specific principles and processes of the various trades, and assist in the solving of daily difficulties.

A list of the short unit courses offered in the household economics department will give an idea of the character and length of the courses:

1. Removing spots and stains, fine starching and ironing 5 lessons
2. Family washing and ironing 5 lessons
3. Food adulteration and preservation 5 lessons
4. Upholstering 5 lessons
5. Cleaning and repairing 5 lessons
6. Feeding growing children 5 lessons
7. Emergencies 5 lessons
8. Home nursing 5 lessons

VOCATIONAL EDUCATION IN THE MIDDLE WEST.

First Annual Convention, Chicago, February 5-6.

THE first annual convention of the Vocational Education Association of the Middle West was held in Chicago, February 5th and 6th. If the first convention may be considered a criterion, this association promises to be one of the largest and most influential organizations of this character in the entire country. Every session was attended by between 800 and 1000 persons, 450 being seated at the banquet. There was no lack of enthusiasm or interest in any of the sessions.

This association is the outgrowth of a feeling that there is a need for an organization which will devote its attention to the solution of the problem of vocational education in the Middle West. Its object, as stated in the constitution, is "to study problems relating to vocational education and to bring the results of this study to public attention for the purpose of fostering types of education that will meet the vocational needs of youth and the reasonable demands of industry for efficient workers while preserving those elements of general education necessary for good citizenship in a democracy." The organization meeting was held a year ago at which time, W. J. Bogan of the Lane Technical High School was elected President.

The subject for discussion in the opening session was the experience of various states in operating under existing laws for vocational education. John A. Lapp, Director of the Indiana Bureau of Legislative Information stated that Indiana has made greater strides in Vocational Education than any other state; that at the time of the enactment of the law, not a dozen men in Indiana really knew what the term vocational education means, and at the present time there are 4000 persons in schools and classes which qualify for state aid under the law.

G. L. Sprague, Industrial Co-ordinator for the Industrial Education Commission of Wisconsin stated that the Wisconsin law of 1911 was written to meet the needs of Wisconsin, and that so long as the law fulfils that purpose, Wisconsin will be content with it. At the present time 24,000 persons are receiving instruction in the continuation schools of that state.

Arthur D. Dean, Chief of the Division of Vocational Education of the State of New York, was not certain that

the Vocational Education law of New York is perfect, but that it has several suggestive features. It is short, simple and specific, and gives the Commission discretionary powers in regard to many of the details of administration.

The subject for discussion at the banquet was the merits and disadvantages of the "unit" and "dual control" of Vocational Education. E. G. Cooley, Vocational Education Expert of the Commercial Club was announced to present the advantages of dual control. Mrs. Ella Flagg Young, Superintendent of Chicago schools, John H. Walker, President of the Illinois Federation of Labor, and Dr. Frederick W. Roman of Syracuse University were announced to speak on the same program. As the views of these speakers were known to differ widely from those of Dr. Cooley, interest was centered in this session. At the eleventh hour, Dr. Cooley declined to appear. Mr. George L. Wilson, Chairman of the Committee on Education of the Association of Commerce, was called upon to present the arguments for the dual system. As Mr. Walker was unable to appear, Victor Olander of the Chicago Federation of Labor, gave the views of organized labor in Illinois.

It was charged that the interest of the promoters of the dual system is not prompted by altruistic motives; that they are attempting to exploit children and to prevent the complete education of the workers in industry. Universal apprenticeship was urged as the remedy and figures were quoted to prove that apprenticeship is disappearing in Wisconsin under the system in that state. It was stated that children who will not stay in school will not stay in jobs, and that the jobs need changing fully as much as the schools need a change. Counter charges were made that the Chicago Federation of Teachers which is united with the Chicago Federation of Labor, is not interested in the promotion of the unit control for altruistic motives; that this interest is to secure legislation which will provide larger appropriations for educational purposes in order that teachers' salaries may be increased. The commercial organizations of Chicago support a man who devotes his time to vocational guidance, and the women's clubs claim that they support four women for this purpose. Dr. Roman, who secured his degree in the University of Berlin, his thesis being upon the subject of Vocational Education, challenged statements which have been made by Dr. Cooley and Mr. McCarthy to the effect that the German system is a dual one, as misrepresentation of fact. He stated that the practical businessman is not now able to manage his own business without the aid of troops in some states, and that under these circumstances they could not be entrusted with the administration of the schools.

Mr. Charles L. Winslow, expert with the United States Bureau of Labor Statistics urged that systems of industrial education be planned only after careful investigations of the industries. He presented a schedule of the facts concerning conditions which should be determined, before the preparation of youth for specific industries is undertaken.

The following officers were elected for the year: President, Prof. Frank M. Leavitt, University of Chicago; Vice President, Henry N. Greenebaum, Chicago, Secretary A. G. Bauersfeld, Chicago; Treasurer, Wilson H. Henderson, Milwaukee. The time and place of the next meeting will be determined by the Executive Committee.

INDUSTRIAL EDUCATION IN WEST VIRGINIA.

A BILL providing for Industrial Education has been introduced in the Legislature of West Virginia and will undoubtedly be passed. The law provides that boards of education in any district, or independent district, and county high school boards may establish in the elementary or high schools, under their control, schools, departments or classes for the teaching of Manual Training,

Home Economics, Agriculture, Commercial subjects and such other industrial and vocational subjects as they may determine. The schools, departments or classes are to be maintained from the common school funds of the respec-

tive communities. At the discretion of the boards, industrial and vocational instruction may be conducted beyond the regular school term. The bill has been passed to engrossment in the House.

GENERAL NEWS NOTES

THE WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION will hold its annual convention in Chicago, May 5-6-7-8. The meetings and exhibits will be in the Art Institute. Information concerning the meeting may be had from Secretary Wilson H. Henderson, Milwaukee, or Miss Lucy S. Silke, Tribune Building, Chicago. The exhibits will be in charge of Miss Lydia Pohl, 808 Tribune Building, Chicago, Ill.

LANSFORD, PA. The Lehigh Coal and Navigation Company for several years past has been aiding the school system of Lansford very materially by bettering educational conditions. The School District gives the use of a building for conducting a night school called "The Mining Institute." Courses of study range from learning to read and write in English by foreigners, up to and including courses in mining engineering and electricity. Officials of the company fill the positions of teachers, thus assuring those who take the courses of having practical teachers. There is at present an enrollment of nearly two hundred and fifty students. There is no age limit.

Once each month a public meeting is held at which papers are read and discussed, interspersed with various forms of entertainment. Much good has been accomplished, and the efficiency of those taking these courses is quite pronounced.

OMAHA, NEB. Manual training departments have been introduced in two additional schools. A course in sewing has been introduced in the high school under the direction of a special teacher.

LA SALLE, ILL. A Short Course for Farmers was held recently in the LaSalle-Peru Township High School. Illustrated lectures were given on Milk Record Sheets, Feeds for Dairy Cows, Re-enforcing Concrete for Buildings on the Farm, Judging Wheat and Oats, Care of Orchards, Types of Soils, Corn Judging, Stock Judging, Farm Mechanics, Gas Engines, Draining Soils and Farm Conveniences.

OSHKOSH, WIS. The cooking classes of the evening school have begun the making of bread and the preparation of meats. The lessons cover meals, selection of foods, marketing, preparing and serving.

NEW BRUNSWICK, N. J., has made a notable change in its manual training activities during the present year. A man teacher of woodworking, a woman teacher of sewing and cooking and a woman teacher of elementary sewing have been added, making a corps of six teachers instead of three. The teacher who last year taught both sewing and cooking now devotes all her time to cooking.

The increase in the teaching staff in New Brunswick has enabled the School Board practically to double the time assigned to manual training and domestic science in the grammar grades. The present time allowance is as follows:

Sixth grade, boys in woodworking and girls in sewing, two hours a week each.

Seventh grade, boys in woodworking and girls in sewing and cooking (one-half year each), two hours a week, in one period.

Eighth grade, boys in woodworking and girls in cooking, three hours a week each, in two periods of one and two hours respectively.

New Brunswick is requiring woodworking of all first year high school boys and cooking of all first year high

school girls, in two consecutive high school periods of about one and one-half hours each.

At the meeting of the Texas State Teachers' Association, held in San Antonio, Nov. 26, 27 and 28, a very interesting session of the Industrial Arts section was held. Papers were read by Mr. Fox and Miss Jonas of the San Antonio Schools, by Jas. R. Coxen of the Southwest Texas State Normal, and by O. A. Hanzen of the State University. Because of the increasing number of teachers and the varied problems that need to be considered it was voted to divide the organization into two sections—Manual Training, and Home Economics. Miss Emma Pirie, Director of Home Economics in the San Antonio Schools was elected Chairman of the Home Economics Section and Jas. R. Coxen, of the Normal School at San Marcos, chairman of the Manual Training Section.

The meeting next year will be held at Corpus Christi. The number of teachers of Industrial work is increasing rapidly in Texas and an effort will be made to have practically all of them at the next meeting.

NEW YORK, N. Y. A course in trade subjects, on the part-time basis, for boys, and one in homemaking and other useful occupations for girls, have been introduced in the Bushwick high school. The first is a full four-year course and is intended to give boys a start in such trades as machinist, draughtsman, engineer, carpenter, electrician and mechanic. The second is for girls who cannot spend more than three years in the high school and who wish to prepare themselves for household occupations. The subjects for the girls' course in household arts are as follows:

First Year—English, 6 periods; sewing and cooking (2 double periods), 4 periods; household science, biology (including hygiene and sanitation), 5 periods; household arithmetic, 2 periods; drawing, 2 periods; physical training, 2 periods, music, 1 period.

Second Year—English, 5 periods; household chemistry and bacteriology, 5 periods; sewing, 4 periods; advanced cooking and household management, 4 periods; drawing, 2 periods; physical training, 2 periods; music, 1 period.

Third Year—English, 4 periods; millinery and dress-making, 4 periods; household decoration, 2 periods; American history and civics, 4 periods; home nursing and dietetics, 2 periods; physical training, 2 periods; music, 1 period.

A SPECIAL SHORT COURSE IN AGRICULTURE has been opened at the Geneseo Township High School, Geneseo, Ill. The course will cover three months and will end in March. The work is designed to meet the needs of farm boys for whom there has been no adequate provision—those whose parents need their services during the busy months of the year, and those who must work during the summer.

PRINTERS PREPARE TO TEACH.

THE EXTENSION DIVISION OF THE UNIVERSITY OF WISCONSIN has organized a class of journeyman printers who wish to prepare themselves to become teachers in industrial schools. The class is conducted in Milwaukee, the men attending school in the evenings. The university classes for training industrial teachers now contain carpenters, patternmakers, plumbers, machinists, draftsmen, electricians, printers, painters, interior decorators, and cabinet-makers.

NOW, ARE THERE ANY QUESTIONS?

Readers are urged to ask questions concerning the Industrial Arts. The editors will reply to those questions which they feel that they can answer, and to other questions, they will obtain replies from persons who can answer them authoritatively. Questions should be addressed to THE EDITORS.

Drilling and Cutting Gems.

Masterton, New Zealand. Q:—I want to ask you the following questions about stone polishing and drilling:

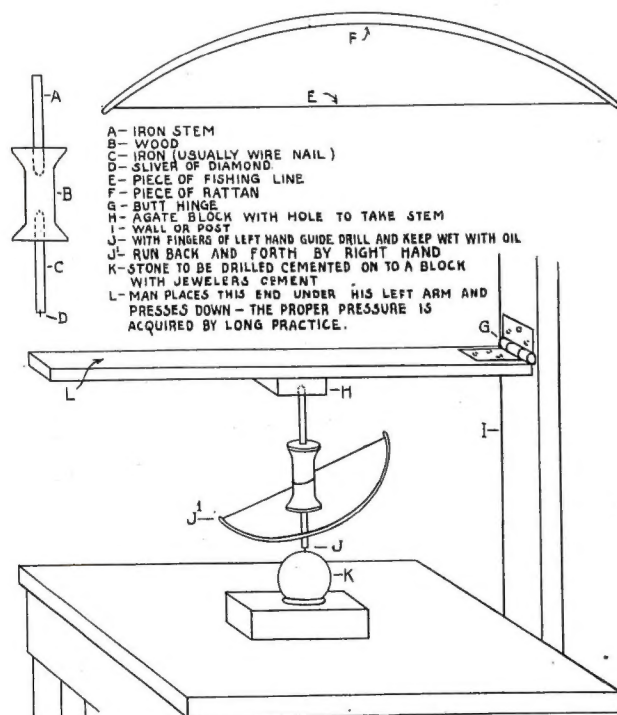
1. What kind of drill is used for boring small holes, 1/32 inch to 1/8 inch, in hard stone, like Jade? Where are the drills procurable?

2. What are the names of some books and publishers of them, giving information on cutting and polishing stones, and illustrations of machines used and processes employed?

3. Who are the makers of stone grinding and polishing lathes and slitting disks?

A:—We referred your questions to *Espositer, Varni Co., New York*, who kindly sent us the following replies:

In answer to your first question, we use a drill which is made from a small rod of iron with a sliver of diamond set into the point in such a manner that the edges of the diamond just clear the diameter of the metal. These drills may be imported from Germany. We have imported a few ourselves, but just at present, it would be difficult to get some from that source, so we would advise that you correspond with the S. S. White Dental Co., of New York City, who also make diamond drills. In most large lapidary shops, one man usually attends to the drilling, and he makes his own drills. The art of drilling and making the drills is acquired by long practice, and usually a man



Arrangement of Gem Drill.

doing this sort of work prefers to make his own drills and can do little else but drilling. On holes of one-eighth of an inch and over, a copper metal tube is used and the edge is charged with diamond powder. This runs in an upright lathe like the ordinary drill. In all drilling, it is necessary to have the work well lubricated with oil or turpentine. Diamond pointed drills are revolved both ways, that is, 30 or 40 revolutions in one direction and back again. These drills are revolved by a bow. (See illustration.)

In answer to your second question, we know of no book which deals exclusively on cutting and polishing stones. We do not believe any of the books on gems give the necessary information. There are so many different kinds of cutting and so many different kinds of stones cut that we would advise your questioner to let us know the kinds of stones he has on hand, the nature of the cutting to be done on them, and we will go into that particular branch with him. It is impractical to cover the whole ground, as in order to do so, we would have to explain the cutting of Sapphires, Amethysts, etc., and a great many of these he might not care anything about.

In answer to your third question, there really is no machinery known as lapidary machinery. Most of the tools we use are either made up specially or are borrowed from other trades. For instance, we use some regular grind-stone heads, which are used in machine shops for running emery and carborundum wheels. Then we use spindles, known as lapidary spindles. These are made to order and any machinist can make them from a drawing. We will supply this drawing if your correspondent wants one. We have some spindles which we have taken out, as we have found them too light for our work. They might, however, be suitable for an amateur who does not require heavy wheels. The benches in which these spindles run can be made by any carpenter from drawings. The slitting disks, lapidaries usually turn up out of a piece of flat, soft sheet metal. Similarly various other machinery and tools used in our trade, are made up from other industries or are specially designed.

Making Boilers.

Trenton, N. J. Q. At the end of the fifth article on "Elementary Mechanisms," Mr. Kuns makes the statement that "boilers have been treated elsewhere." Will you kindly let me know where?—*J. L. J.*

A. The boilers used by Mr. Kuns in the Oyler school are described in the *MAGAZINE* for August, 1914 (Vol. II, page 69).

Occupations Open to Children.

Green Bay, Wis. Q. I should like to know where to procure the pamphlet by Annie Davis, on "Occupations and Industries Open to Children," mentioned in the September, 1914, number.—*G. J. L.*

A. Address Miss Anne Davis, care of Jones School, Plymouth Court and Harrison St., Chicago, Ill.

Binders' Supplies.

Minn. Q. 1. What size of thread is used in sewing books on tapes? 2. What thickness of cloth board should be used for split-board covers for a book about 5x7? 3. What is the commercial name for the tapes used for Library Binding?—*C.*

A. 1. Hayes' No. 20, two or three cord thread is about right for ordinary work. 2. No. 30 is a good weight of board for split covers. It comes in bundles of about three dozen boards from 20x25 up, in size. 3. Such tape is commonly listed as "Printer's Tapes," and comes in about 36 yard pieces.

Leather for Binding.

Grayslake, Ill. Q. Where may I get leather for making bill cases, pocket books, and other small articles?—*J.*

A. Either Orr & Lockett or A. H. Abbott, Chicago, can furnish good calf skin leather for tooling purposes. This comes in skins of from twelve to fifteen square feet each, and costs about fifty cents a foot by the whole skin. Slade, Hipp & Meloy, Chicago, handle Morocco, Seal, Sheep, etc., and also thin leathers for lining purposes.